VESICO-VAGINAL FISTULA;

ITS

HISTORY AND TREATMENT.

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OF

VESICO-VAGINAL FISTULA.

HISTORY.

THERE is much consoling in the thought that, in most of the diseases and accidents incident to the body, the sufferers are not debarred the society, sympathy, and entertainment of friends. Such considerations greatly mitigate and sustain, under the severest physical distress. But there is one accident liable to occur in the female—and that, too, in the exercise of the highest function of her nature—which dooms her to isolation and seclusion, renders her presence intolerable to friends, and compels her to exist in an atmosphere repugnant in the highest degree to her own sense.

Until a very recent period, the unfortunate victim of vesico-vaginal fistula was obliged to confront her situation under the conviction that her case was absolutely hopeless, and has, in some instances, sought refuge from the mental suffering by self-destruction. One of the grandest triumphs of American surgery—for it is all her own—has been to step in and lead such forth into the light of day, and restore them to the bliss of family and social life.

Antecedent to the discovery of the forceps, such accidents must have been of very frequent occurrence, although comparatively little is said in medical or surgical works on the subject, as such, were, by common consent, regarded to be beyond the resources of obstetric surgery.

HIPPOCRATES speaks of a discharge of urine through the vagina sometimes following difficult labors, with some unimportant remarks in regard to cleanliness; no hint is anywhere thrown out, leading to an inference that such cases admitted of cure. Without disturbing the repose of ancient medical record, it may not prove uninteresting to interrogate a few comparatively modern authorities.

MAURICEAU, in his work, published in 1712, lays down the following aphorism: "L'issuë involuntaire de l'urine causée par une fistule qui s'est femme, est ordinairement incurable si elle duze plus si trois mois." No operation does he propose, but only looks for a cure, when it does occur, as a purely natural or spontaneous result.

HOFFMAN, in 1724, describes the accident, and refers it to the proper cause: "Quando enim fibræ sub diuturnoribus partus laboribus ad infantis capiti, ad os pubis compressæ diu manet fieri deinde solet ut inflamentur, atque in abscessum abeant, aliquot denum a partu diebus consummandum; unde fluxus, et stillicidium urinæ per vaginam tertio demum, vel quarto die contingit." It is quite evident, too, the art of the Genevan embraced no means of repairing the accident.

ASTRUC, physician to the King of France in 1776, has no notice whatever of the affection in his work.

SMELLIE, in his publication of 1776, although he describes an operation for this form of fistula, had evidently never performed one himself or even witnessed it performed, as he adds, "I wish the operation may not be found impracticable."

DENMAN alludes to ulceration and sloughing of the vagina after difficult labor, but suggests no remedy.

BURNS, in his work on midwifery, edited in 1820, by JAMES, describes the lesion, and advises a catheter to be worn for some time, under the conviction nothing else could be done.

CONQUEST, in his Outlines of Midwifery, published in London in 1820, insists on the propriety of attempting a cure by an operation, but does not designate any particular method, nor does he intimate a knowledge of any cures having been effected.

James, in his System of Midwifery, of 1813, not only takes notice of this form of fistula, but advises the employment of an elastic catheter, and adds, *perhaps* it may heal. The same author also speaks of the use of caustic when the opening is small, and freshening the edges when it is large, conjoined with the use of the catheter.

Ashwell, quite a prominent practitioner and writer in London, in 1828, has no allusion to the subject whatever.

William Campbell, of Edinburgh, in 1833, appears to have given unusual attention to the subject. The opening is clearly described, and its most common location, near the neck of the bladder. In his experience, the catheter and recumbent position perseveringly employed has, when pronounced by others utterly hopeless, permanently *relieved* cases: the phraseology, it will be perceived, will not allow the conclusion that such were cured.

Gooch, in 1831, alludes to a case having got well by a gum-elastic bottle, with a sponge attached, being pressed into the vagina and kept opposite the opening. This solitary case of reported cure is treated as a very unusual and extraordinary event.

The cases reported as cured by Lallemande, Phillips of Rheims, and Vidal, in 1834, Velpeau most positively asserts were not cures.

Blundell, in his work published in 1834, disposes of the subject in a most summary manner by stating, a slough of the vagina may lay open the bladder.

Ramsbotham, writing as late as 1841, does not treat of the subject.

Davis, in 1841, describes the manner in which such an opening is made, with the additional statement, "it is almost a universal fact, that they never do heal."

Dewees, in his work on midwifery, makes no mention of it.

Churchill, in 1844, speaks of all such openings as being perfectly hopeless.

Simpson, in his work published in 1865 and '66, when describing the result of long-continued pressure by the fœtal head against the vesico-vaginal septum, speaks of the slough separating and leaving an *incurable* fistula.

Reybard, in 1856, published a paper on the palliative treatment of this form of fistula, believing the affection incapable of cure.

Let us now interrogate a few of the eminent surgeons abroad and at home, and ascertain with what voice they testify on this subject.

Ambrose Paré's great work bears date 1582, and while the subject of fistula in general is discussed, this form is not even mentioned.

Heister mentions it as incurable.

Samuel Cooper, in his Surgical Dictionary, speaks of different kinds of fistula, but does not in any way allude to the one under consideration. In 1808, in the 1st volume of his Surgery, some methods of operation for the cure of such fistulæ are described, but he evidently doubts their practicability.

Mr. Liston asserts that an operation only makes the patient worse, by converting a small into a large opening, and adds, "There is little hope in a case of any size." To the same conclusion tend the testimony of Mr. Earle and Mr. Lawrence, both of whom state a successful operation impracticable.

Chelius says the prognosis is always very unfavorable.

Miller believes a favorable result by any means improbable.

Velpeau asserts of all the cases reported as cured, there were few free from doubt.

Pirrie has not a word upon the subject. The subject is not introduced by name into the works of Dorsey or Gibson.

Desault. in his Treatise on the Urinary Organs, confines himself simply to the palliative treatment.

Dupuytren only hoped, by cauterization, to effect something.

Mr. Earle, after thirty operations, succeeded in curing one case; no wonder he pronounced the operation the most difficult or unsatisfactory one in surgery.

Nélaton, as late as 1854, talked of autoplastic processes and the cautery. These are but a few of the names which might be introduced.

In 1839, Dr. Hayward, of Boston, succeeded in curing a case by freshening the edges, and approximating them with a thread suture. In 1840, two additional cases were treated, with a similar result, and although twenty operations were performed in attaining these three cures, yet, in a prospective point of view, their value cannot be overestimated.

In 1847, Dr. Pancoast, Professor of Anatomy in the Jefferson Medical College, reported two cases, cured by a tongue, and groved incision, the wound being adjusted by his silk-thread plastic suture. In the same year, Dr. Mettauer, of Virginia, gave to the profession the history of a case successfully treated by vivifying the edges, and uniting the same with leaden threads. Such occasional cures doubtless tended to inspire a hope of the ultimate curability of this disgust-

ing disease; but it was not, however, until about 1852, when Dr. I. Marion Sims, then of Montgomery, Alabama, gave to the profession the fruit of his labor and observation, by which this operation was removed from the category of probabilities, and crowned with a success which compared favorably with any of the established operations in surgery. For this he has placed the civilized world under a debt of gratitude.

Causes.

Among the causes inducing this lesion may be enumerated:

First. *The Pessary.*—When this instrument is out of proportion, and fitting badly, or corroded, or encrusted with saline matters, it may induce ulceration of the vagino-vesical septum. Profs. Beirards and Lisfranc each relate a case of the bladder and rectum both being opened by a pessary; one of the patients died of peritonitis (*Jour. Nouv. Hebd. de Med.*, t. 1, page 263.) A case of Dupuytren, in the Hotel Dieu, is recorded in the *Dict. des Sciences Med.*, t. vii., p. 47, of a young country woman, whose rectum, vagina, and bladder freely communicated in consequence of wearing a badly adapted instrument; both of these were produced by stem pessaries. A case of this kind is also cited by Desormeaux, a French physician. In most of them, doubtless, the ulceration was brought about by saline deposit on the exterior of the instrument, the angularities of which matter would very soon produce destruction of tissue. Other cases might be introduced in illustration of the same point. In earlier times it is probable such accidents were common, when a great variety of extraordinary materials were employed, not only for mechanical support, but as means of introducing remedial agents into the organs of generation; at present, improvements in the form and substance of mechanical supports will not be likely to furnish us a case illustrative of the condition under consideration.

Second. *Foreign substances in the bladder.*—Under this head may be mentioned vesical-calculi, examples of which are by no means rare. Fabricius Hildanus relates an instance of this nature. Sir Benjamin Brodie another, in which the stone made its way into the vagina by ulceration; and a third is given by Sir Astley Cooper. Dr. Dunlap, of Norristown, in this State, exhibited to me a calculus as large as a hen's egg, which he extracted from the vagina of a female, who had long suffered from the disease, and which had perforated the vesico-vaginal septum. A most interesting fact connected with this case, was the perfect restoration of the parts subsequently by granulation. A very singular case occurred in the East London Lying-in Institute, reported in the January number of the French *Lancet* for 1838, of a woman who, in consequence of a chronic retention of urine, had acquired sufficient dexterity to catheterize herself. From some cause, being without the usual instrument, she extemporized the catheter with the stem of a clay tobacco pipe. On one occasion it was broken, a portion remaining in the bladder, and which, in time, not only passed into the vagina, but finally into the uterus, from which it was extracted.

Third. *Carcinomatous and other forms of ulceration.*—Almost every work treating of the diseases of the female genitalia, furnish examples of malignant growths, involving the uterus, and gradually invading, by destructive ulceration, the vagina and rectum, until they become converted into a common cavity. Phægedenic chancre may produce a similar result. Two cases of this nature came under my own observation in the wards of the Philadelphia Hospital, rendering the poor, unfortunate outcasts, objects of the profoundest commiseration.

Fourth. *Wounds of the Vagino-vesical wall in the legitimate and illegitimate use of instruments.* Under the first may be enumerated the careless employment of the obstetrical vectis or lever, bruising or lacerating the tissues by long-continued efforts to modify a fœtal position, or the slipping of a perforator in cases of craniotomy. The forceps has come in for a large share of animadversion, but they have little agency in producing such an accident; their earlier and more frequent employment, particularly in educated hands, would have prevented many which have occurred. Under the second head may be adduced the violence committed by those ignorant scoundrels who flourish in every great city in their criminal attempts to procure abortion.

Fifth. *Pressure of the fœtal head.*—This, above all others, is the most common cause of vesico-vaginal fistula. It is probably not going too far to say 90 per cent. of such occurrences are due to the prolonged pressure of the fœtal head. The testimony of almost all authors harmonizes in this particular. It was so regarded by Mauriceau; yet singular enough, he was greatly opposed to the use of instruments, whereby a tedious labor might be brought to a close. This prejudice it is said was due to the failure of Chamberlayne to deliver a woman in Paris after a public boast. Not being aware of the existence of a deformed pelvis he had torn the vagina and uterus in several places in his ineffectual efforts to extract the child with the forceps of which he

was the inventor. DENMAN attributed the lesion to long-continued compression of the soft parts. DAVIS expressly declares that it does not result from the use of instruments, but delayed labor. Dr. SIMPSON stops to fortify a similar opinion by stating "these abnormal openings, if produced by instruments, should appear at once, while it is known they only occur several days after their use." SMELLIE, COLOMBAT, and CHURCHILL, all describe the fistula to protracted pressure during labor, and an opinion of similar import is entertained by Professors HODGE and MEIGS. Doctors SIMS and BOSEMAN, whose opportunities for acquiring accurate information on this subject have been extensive, testify to the same fact, and except in a single case my own observation accords with these gentlemen.

If the foregoing statements be correct, what is the modus—the manner in which the lesion takes place? The head in passing through the pelvic cavity presses the anterior wall of the vagina toward and against the posterior face of the pubic bones. If in consequence of failure of the uterine expulsive efforts, or a disproportion between the pelvis and the head, or a want of accord between the diameters of the two, the head long remains thus engaged, the vitality of the soft parts so compressed and bruised will be destroyed, either by the formation of a slough or by inflammation and ulceration. It is asserted by some that a fold of the vagina is caught and pressed against the pelvic bones until its death is insured; but it does not seem probable any such folds would exist when the canal is so greatly distended. The period when the opening occurs varies in different cases; in some as early as the fourth or fifth day, and in others the event may be prolonged—as in one which came under my own observation (case 4)—until the twenty-first day after confinement. When the parts are so injured as to induce ulcerative inflammation, a longer time is required to penetrate the vagino-vesical wall than where they are killed outright, and drop out as a slough.

Classification.

These fistulæ may occur at any point from the middle of the urethra to the termination above of the anterior wall of the vagina, but practically the classification of SIMS or that of Dr. BOSEMAN, the two differing very little, answers every purpose.

FIRST. *Urethro-vaginal;* the opening being between the urethra and vagina.

SECOND. *In the trigone vesicale;* the opening being situated at the cervix of the bladder.

THIRD. *At the bas-fond;* the opening involving the inferior fundus of the bladder.

FOURTH. *Vesico-utero-vaginal;* where the opening communicates with the bladder, vagina, and cervix, or body of the uterus.

FIFTH. Fortunately quite rare where the entire vesico-vaginal wall is destroyed, and it may be the urethro-vaginal also.

The relative frequency of these varieties, as they have come under my own notice, is as follows: First, at the vesical triangle; second, at the bas-fond; third, in the urethro-vaginal septum; fourth, the utero-vesical; and last, the one attended with a destruction which includes the first four classes. This, I think, accords with the experience of most observers. Dr. BOSEMAN, I believe, states, according to his observation, the vesico-utero-vaginal is the most common. I have never but in a single instance seen an example of this kind.

Direction.

These fistules may be transverse, oblique, or longitudinal; determined, it may be presumed, in a great degree by the particular part of the fœtal head impinging, or the exact manner in which the vaginal parieties may be caught. The transverse variety has most frequently come under my own notice.

Form, Size, and Condition.

The configuration or form of such openings may be oval, round, linear, angular, and eliptical; the last most common. A careful study of the muscular component of the vagina will explain this. Its fasciculi are disposed longitudinally and circular; the former the most numerous and distinct; and of these, those on the lateral parieties are so associated with the levatores ani that they contract less when divided than those occupying an intermediate position, and hence the ovidal or eliptical form of most fistula. The dimensions of the opening also vary from an aperture so small as barely to admit the introduction of an ordinary probe, to one through which might be passed a good-sized egg. So far as the patient's comfort is concerned, the small opening is quite as bad as the large one; in either case the urine will be constantly passing the vagina.

The condition of the borders of the fistula—like its size and form—differ much. Sometimes they are, especially the upper one, thin, inverted, quite pale and smooth; in other instances thick, soft, spongy and vascular; and again of almost cartilagenous consistence, inextensible and sparsely supplied with blood vessels. The mucous membrane of the bladder often projects through the opening, forming a red, erectile-looking tumor,

Dr. Gross gives a remarkable case—in his work on the urinary organs—of the entire bladder escaping through such a fistulous orifice into the vagina. The condition of the edges as to thickness, density, and vascularity, is a matter of great practical moment in the cure of disease.

Diagnosis.

It is not usually a difficult matter to ascertain the existence of this affection. If inquiry be made as to the state of the bladder immediately succeeding the labor, the patient or her attendant will state that for two or three days there was an inability to evacuate its contents, with some pain or uneasiness, requiring perhaps the use of the catheter; after this a stillicidium of urine through the urethra; or this last condition may have been present from the first. At some period, however, varying from five to twenty days from the labour, the incontinence is complete, the urine escaping entirely from the vagina. The patient sometimes describes this state as being preceded by a sense of something giving away. The labiæ, inner surface of the thighs, perinæum, and the buttocks being constantly bathed in the secretion become red, inflamed and covered with a crop of pustules, which sometimes form ulcers of considerable depth. The genitalia and surface of the vagina frequently become encrusted with a saline deposition (urates), and a strong urinous odor is emitted from her person and clothing. These may be regarded as the rational signs of the disease. Although they do not in themselves establish or justify the conclusion that a fistula exists, they form a strong presumptive proof of the fact. Only upon a physical exploration of the parts can we ascertain with certainty the accident. With this view let the patient be placed in bed, on her side, with the limbs well drawn up, and the hips on the edge of the same, before the window, with a good light. Introduce the duck bill speculum into the vagina, and draw the perineum well back toward the sacrum until the entrance of the air distends the vaginal cavity. If the lesion exists it will most likely be at once detected, unless it should be so small as to escape observation. That it be not thus overlooked, a pocket-case probe should be introduced into any suspicious pockets or depressions, and moved carefully about until their nature and extent are determined. Where the aperture is so small as not to be readily found, it has been advised to inject through the urethra into the bladder some colored liquid, distending its walls, and carefully noting if any can be discovered passing into the vagina. Some prefer having the patient on her elbows and knees, others on the back in making the examination, but the one on the side answers every end, and is more in consonance with her feelings of modesty and propriety. With the aid of the speculum no doubt need exist; without it no examination is complete. I have been called to cases said to be vagino-vesical fistulæ, but which on occular inspection proved to be incontinence from defect in the muscular endowments of the vesical cervix allowing the urine to find its way back into the vagina after escaping passively from the urethra.

Complications.

Under this head may be enumerated stricture of the vagina, recto-vaginal fistula, obliteration of the urethra, and malignant disease of the uterus or rectum.

Treatment.

The treatment of vesico-vaginal fistula includes the preparation of the patient, the operation, and subsequent management.

Preparation. No woman can be in the best condition to undergo an operation for her cure, until after the lapse of at least eight or ten weeks from her confinement. I have operated as early as the fifth week, and with complete success, but, nevertheless, do not think so early a date should be fixed as a rule in practice. It requires at least two months before the system has completely recovered from the perturbating influences of the parturient act, and her secretions duly established. The moral and physical suffering induced by the existence of the fistula tend to put the woman out of health. If we find her pale, feeble, with loss of appetite, and harassed by a train of nervous symptoms, it may require several months of preparation; during which time a carefully regulated nutritious diet will be demanded, fresh air, attention to the intestinal and other secretions, conjoined with the use of tonics, such as the preparations of iron or infusions of the bitter vegetable class. It is certain, no one familiar with the treatment of this form of fistula, will be rash enough to subject his patient to the inconvenience of such an operation, before attending to these preliminary measures.

There is no operation in surgery which depends so much for its success on healthy constitutional conditions as the one under consideration, nor must we overlook the local treatment. All inflammation must have subsided, the connective tissue component of the parts must be well matured, and sufficiently dense to withstand the traction of the sutures, the edges of the opening should have considerable thickness and a good supply of bloodvessels. All this will be favored by due attention to cleanliness, injecting tepid or cold water, with the addition of a little palm

soap, or a decoction of oak bark into the vagina every day. Should the edges continue pale and thin, they must be subjected to a special treatment, with a view to make them more voluminous. This is best accomplished by making a few shallow incisions parallel to their long diameters, and rubbing into each a little nitrate of silver. The caustic should be used about every third day. In the course of a few weeks, the requisite change will have taken place. The saline matters, which so commonly encrust the margins of the fistula and other parts of the genitalia, producing much uneasiness, may be counteracted by the internal administration of nitro-muriatic acid, as a good tonic. The excoriation due to the urinous stillicidium, is best relieved either by an ointment of the precipitated carbonate of zinc, or by a mixture of the black wash and glycerine. Attention must also be given to her catamenial period, three or four days after its accomplishment being the most fitting time for the operation. If done during the latter half of the month, the irritation of the parts, together with the prolonged etherization, are prone to produce premature menstruation. The day previous to the operation, a gentle cathartic should be administered, after the action of which, one grain and a half of opium, in pill, should be given to quiet all intestinal irritation.

Should the fistule be the result of carcinomatous ulceration, any operation will be futile, as everything tends to a fatal termination. When it co-exists with a recto-vaginal opening, the escape of purulent matter into the vagina will be unfavorable to healing; yet, if the peristaltic movements can be sufficiently controlled by opium or some of its preparations, there is no reason why the vagino-vesical fistula should not be closed, before undertaking that, between the vagina and intestine.

The complication most commonly met with is stricture of the vagina, and, as the opening is usually above it, nothing can be done for its relief until the dimensions of the canal are properly restored. Three methods may be employed for this purpose. First. Incisions of the stricture through the mucous and submucous tissues, followed by dilatation. Second. A submucous division of the contracted bands, and subsequent dilatation; and third, dilatation alone. Choose which we may, there is a strong tendency in the stricture to return. If incision be selected, the reformed parts have the same vicious tendency to contract, and although this is true of dilatation, it is less so than either of the others, and should be selected as best adapted for our purpose. It is effected by either graduated bougies or sponge tents. I have practised each method, and am confident the last is the most certain and least painful.

Treatment.

This is divided into the *palliative and radical.* If, in consequence of extensive destruction of tissue, or the presence of malignant disease, an operation is contra-indicated, we may resort to some means to palliate the distressing situation of the patient. These chiefly point to the collection of the urine so as to defend her person against excoriation, and offensive emenations. There is no task so difficult, and unsatisfactory as this. Many recepticles, and obturators, and other contrivances have been devised; such as a bag of gum elastic worn partly within, and partly without the vagina, styled by Colombat the "*trou d' enfer*" of Feburier; or a gum bottle with a sponge on its anterior face, introduced into the canal; or tampons of fine linen, or soft sponge so adjusted as to occlude the opening. Of all these devices the metallic shield of Prof. Meigs answers the best purpose, yet it must be confessed, all are but sorry contrivances, and will be soon abandoned. A rigid attention to cleanliness, by frequent ablutions, and the use of an inter-femoral napkin or diaper, will perhaps give the most satisfaction. Fabricius Hildanus, as related by Colombat, furnishes an instance of a case which was cured, after eight months, by vaginal injections, consisting of barley-water, and the mucilage of quince seeds; the following passage, in his quaint style, narrates the event, "Illa autem continuo usa medicamentis (ut dixi) conglutinantibus, et per intervalla etiam purgantibus, intra menses octo, non sine admiratione omnium eorum quibus res cognita plane curata fuit, adeo nunc Dei optimi maximâ gratiâ ne guttula quidem urinæ involuntariæ affluat, sed a vesicâ colligatur, retineatur et excernatur non aliter ac si antea nunquam male affecta fuisset."

Radical treatment.—It was only about the beginning of the present century any attempts for the cure of this distressing malady were thought of, and only within the last fifteen years that any encouraging results have been attained. At present we approach the management of a case of vesico-vaginal fistula with the same degree of confidence as that of stone, or hydrocele. The history of the various methods practised for its cure—although most of them have passed into history—will be presented, as they furnish the most remarkable example of untiring, undismayed perseverance in the face of the most unpromising results, and of a fertility of professional resource to

be found in no other department of medicine. These methods may be arranged under the following heads:

1st. By the catheter.

2d. By the catheter, conjoined with the tampoon.

3d. By cauterization.

4th. By the uniting apparatus.

5th. By galvanism.

6th. By transplantation.

7th. By the suture.

First. *By the Catheter.*—It is important to ascertain, at the earliest moment, the existence of a fistula, as a little well-timed attention may procure a cure without an operation. There are cases in which there exists a strong tendency to to spontaneous cure, and advantage should be taken of this, and a catheter placed at once in the bladder, and worn for three or four weeks, the patient being confined to the recumbent position, and due attention to cleanliness observed. A number of such cases terminating successfully have been placed on record, by Fabricius Hildanus, Blundell, Ryan, Sedillot, Campbell, of Edinburgh, Nélaton, and others; and I doubt not similar ones may be recalled by many practitioners extensively engaged in obstetric medicine.

Second. *Catheter conjoined with the Tampon.* This is usually described as the method of Desault, although it more properly belongs to Boyer—the name of the former having doubtless become connected with it in consequence of the truss-like apparatus which he devised to sustain and retain the catheter.

A large-sized elastic catheter is introduced into the bladder, and its end slipped through an opening in a curved rod, one end of which is to be opposite the urinary meatus, and the other secured to an oval plate which rests on the pubes, and is in turn securely attached to a truss-spring surrrounding the pelvis. This controls the catheter, by which means the urine is removed as rapidly as deposited. The margins of the fistula were next pressed toward each other by a round tampon, or plug, made of fine linen filled with lint, well oiled, and pressed into the vagina. It does not appear, of the many cases thus treated by Boyer, more than a single one recovered. With a very slight modification of the vaginal plug, others—as Baines, Guthrie, Young, and Barnes—have reported cures, the treatment continuing from six to twelve months. Those, curious to peruse these cases, will find most of them in the Med. Chir. Trans., Vol vi., page 582; and the Edinburgh *Med. and Surg. Journal*, April No., 1824. Colombat speaks favorably of this plan, provided the edges be first cauterized. It is probable any such cases reported as cured, recovered, not from the tampoon, but from the persevering use of the catheter. The tampoon could exert no influence whatever in pressing together the sides of the fistula, but just the reverse, by unfolding the rugæ or plications of the canal by distension. Let any one notice how a fistule gaps when the speculum is introduced, and the canal distended with air, and then, in withdrawing, how the sides collapse, and the demonstration will be clear.

Third. *Cauterization.*—Of this, Colombat said, "It is the best method we can oppose to vesico-vaginal fistula." The agents employed were either the nitrate of silver, or the actual cautery. The former was conveyed to the fistula by fixing a stick in a porte-crayon, and conducting it to the opening through a fenestrated speculum introduced into the vagina, and repeated every four or five days, followed by emollient injections to relieve pain. After the edges begin to assume a swollen, or raw appearance, a catheter, according to Colombat, should be placed in the bladder. A few successful cases by this mode of treatment have been reported by Dupuytren, Delpech, McDowell, of Kentucky, Liston, Colles, and Ferrall. When the cautery was used, a bean-shaped stillet, heated to a white heat, was applied to the opening, a fenestrum shielding the vagina being first introduced—and the parts lightly touched so as to induce a superficial slough. The advocates for caustics have been Chelius, Vacca, Berlinghien, Czeekiersky, Ehrman, Monteggia, Guthrie, and Colombat; for the hot iron, Dupuytren, Delpech, Bellini, McDowell, Liston, Blasius, and Dieffenbach. The caustic treatment was somewhat modified by Lallemand, principally, who conjoined with it a uniting apparatus. This surgeon was so particular as to take an accurate cast of the fistule with a very plastic wax. After the edges were made sufficiently alive by the caustic, he adjusted his instrument, one portion of which acted as catheter, and through its openings hooks were made to protrude, penetrating the posterior lip of the fistula on its vesical surface. A roll of lint, or charpie, was next placed against the under surface of the urethra, and pressed upward toward the vagina by a moveable plate connected to the anterior extremity of the catheter, the object being to press the lower lip of the fistula toward the other or upper lip impaled by the hooks. Dupuytren attempted the same thing by a peculiarly constructed catheter. Langenbeck very properly

pronounces such devices as complicated, and devoid of practical value.

Fourth. *The Uniting Method.*—Laugier, in order to bring the edges together, invented a pair of claw-forceps, the blades of which could be introduced separately, and after being implanted on opposite sides of the fistule, secured together, by which the coaptation was effected. Quite recently, an instrument, acting on the same principle, has been invented by Dr. Betancourt, while pursuing his studies in the University of Pennsylvania.

Fig. 1.

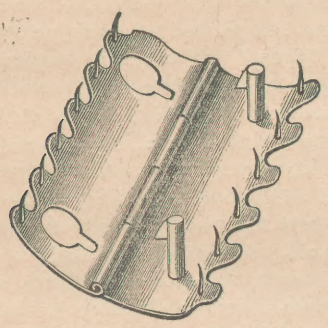


Fig. 1 is two light metallic plates connected by a hinge; their margins are scalloped, and support sharp hooks, designed to sieze the margins of the fistula. In one plate are two eyes, and in the other, two moveable posts with shoulders, which are intended to pass through the eyes and hold the plates together.

These processes, unlike the others, act on the vaginal surface of the opening. As to their value, it may be said of all of them, what Langenbeck pronounced of Lallemand's mode, "they are theoretical, and devoid of practical value."

Lallemand, as far as I can ascertain, never reported more than a single case of cure, and even this Velpeau declares proved a failure. Laguier confesses he had not succeeded in a single instance with his uniting forceps.

Fifth. *Galvanism.*—The attempt to cure this malady by galvanism, is due to Mr. Marshall, of the University College, London. The impression was to be made by bringing the poles of a battery in contact with the sides of the opening, and was only another phase of the cautery. It only serves to demonstrate the straits into which men are thrown when they resort to such chimerical expedients.

Sixth. *Transplantation.*—A very ingenious operation was devised and executed by Jobert; it was by transplantation of tissue. The circumference of the fistula being drawn down, was freshened, a flap was raised from the inner surface of the labium, and being turned into the opening, was secured by a number of stitches; a catheter was kept constantly in the bladder during the treatment. In one case the growth of hair, the follicles of which were in the flap, induced a vaginitis, and also interfered with the execution of the conjugal act. In one case the material to form this fleshly obturator was taken from the buttock and thigh, and proved altogether successful in effecting a permanent cure. The results of four cases reported, furnish us with one cure, two failures, and one death. Where a large part of the vaginal-vesical septum has been destroyed, the operation of Jobert might answer a valuable purpose.

Seventh. *By Suture.* The introduction of the suture marks an important epoch in the history of vaginal fistulæ. It was a step in the right direction. The credit of its introduction is due to Roonhuysen, a distinguished obstetrician at Amsterdam, who proposed its use in 1663. It was violently opposed long after by the celebrated Petit, who asserted that incising and introducing a thread in parts so situated was a task almost incapable of execution.

The operation of Roonhuysen consisted in freshening the edges by means of a knife, scissors, or cutting forceps, operating through a speculum, then pushing across the opening needles, formed from the quill of the swan, and binding the parts together by winding about these novel pins, thread as we apply the twisted suture. Lewsinski, long after, in 1802 proposed the suture. It formed the subject of a thesis before the Faculty of Medicine in Paris. His instrument for placing the ligature was a catheter, carrying a needle which had a spring attached, and bearing a thread. This instrument was passed into the bladder, the spring pushed forward, making the needle to pierce the posterior wall, afterward the anterior wall, and securing by a serre-noeud.

Volter recommended after pairing the edges to coaptate by the interrupted suture. To execute this he used curved needles, threaded with waxed silk, and passed them at short intervals through the margins of the fistulæ, securing each by tying in a knot.

Nagele's method consisted in removing the circumference of the opening with a knife or scissors, the edge of which was guarded by a shield, moveable at pleasure; then introducing the thread sutures by a peculiar needle, one end of which was supported on a ring, through which the finger could be slipped, and near to the other extremity or the point was an eye for the thread. The point was guarded by the finger while being carried to the fistulæ, and after the sutures were passed the parts were drawn to-

gether, by twisting their ends together and allowing them to hang out of the vagina. Not the least important part of his plan was the use of the silver catheter; but singular enough its utility was destroyed in a great measure by the attachment of a stop-cock, only allowing the urine to flow at particular times. The same authority proposed the use of gilt or silver pins, and around them silk threads. He employed likewise the glovers suture; and for stitching a watch-spring, with a needle point, and concealed in a la forest catheter.

Flamant manifested most concern about paring the edges of the fistulæ, to accomplish which he advised the use of a knife guarded at the point to protect the adjoining parts. The attention of Le Roy was most directed to the same subject; and hence we find him proposing different forms of cutting instruments, and also a fenestrated speculum, with hooks to unite the sides, as a substitute for the suture.

Shræger freshened the edges with a pair of curved scissors; deposited wax threads by means of curved needles, supported on a needle-holder, and made them secure by introducing the ends through a rosary of small wooden balls or beads, and making them fast by tying over a little cross-piece. The same surgeon used the glovers suture.

Luke employed a bivalve speculum to expose the parts, angular knives to incise the borders of the fistula, hooks to draw it down, and curved needles to deposit the sutures.

Malagodi used a leather thimble, which he placed on the left index finger, and hooking it under the margins of the openings pared the edges when thus stretched, the approximation being made by silk threads introduced by curved needles, manipulated in the grasp of a needle-holder. To prevent urinary infiltration a catheter was worn in the bladder, and the vagina stuffed with lint or chapie.

Ehrman recommended scarifying or cauterizing the edges, and then bringing them together with sutures, passed by curved needles, managed with a porte-aiguille. When he used cauterization a tube was inserted into the vagina, and through it a brush, dipped in a mineral acid, was carried up to the fistulous opening. The speculum he employed was a tri-valve, and his sutures were inserted by curved needles.

Gosset, surgeon at one time to Newgate, London, operated successfully in 1834 on a case by the following method: The edges were carefully pared; metallic threads, well gilded, were introduced by curved needles, passed with a needle-holder, and the sides brought together and so retained by twisting the wires. To keep the bladder empty an elastic catheter was worn, and the patient requested to lie on the breast. It is worthy of notice here that this surgeon, in executing his operation placed, his patient on her elbows and knees.

Kilian separated the walls of the vagina with blunt hooks; used a silver catheter, curved, similar to the male instrument, to bring the fistula forward for incising; and with curved needles, directed by a Wutzer needle-holder, passed the requisite number of threads, which were secured by Desault's knot tightener.

Blasius advised a grooved suture. The margins of the fistula were fashioned with a sharp-pointed knife, as follows: Taking hold of one side with a hook or forceps, it was split longitudinally, or parallel with the long axis of the opening; then seizing the other and everting it, the knife was applied to its surfaces in such a manner as to give it a cuneiform or wedge-shaped form; needles armed with thread sutures were next passed, drawing the wedge-shaped side into the gutter or slit of the opposite, constituting a tongue and groove (as he calls it) adjustment. He claims for this a more extended apposition or contact of raw surfaces.

Lewzisky's operation consisted in inserting the stitches by means of a canula, traversed by a watch-spring, supporting a needle bearing a thread. This instrument was carried into the bladder, and the needle made to project from the canula, puncturing the septum from the vesico toward the vaginal side. By repeating this process above and below the opening, the ends of the sutures were all brought into the vagina, and secured on that side. This operation is similar in most respects to that of Nägle, and includes the entire thickness of the vesico-vaginal wall.

Colombat furnishes us with an operation much more remarkable for its ingenuity than utility. The chief novelty of his method consists in using a spiral needle, not unlike a corkscrew, (Fig. 2.)

Fig. 2.

Colombat Needle.

having a steel-point, with an eye for the thread. At the other extremity, where it combines with the handle, there is a second eye, through which the ends of the thread are passed, after being wound about the spiral of the instrument. After vivifying the edges with a pair of cutting forceps, the needle is made, by a rotatory movement, to pierce one side of the fistula; then the other,

and so on, just as one would bore a gimlet, until its entire length was traversed, when by reversed turns it was removed, leaving the thread in its track, as represented in Figs. 3 and 4. This is a

Fig. 3.

Fig. 4.

Glover's suture. The ends of his threads were twisted together and secured with sealing-wax. Dieffenbach very facetiously remarks, this instrument only needs a clockwork attachment to go right.

Deybers employed a wooden catheter, introduced through the urethra, to control the edges of the opening, while being subjected to the knife. The stitching he effected by means of a curved tube enclosing an eyed stilet for the thread, and which was controlled by a spring protruding or withdrawing the point at pleasure. The sutures he used were either silk or lead-wire.

Roux fixed the edges with a long pair of forceps while they were being incised; passed across them silver pins, and drew the wound together by winding about them threads similar to our twisted suture.

Wuther incised the fistula with either curved scissors or a sickle-shaped knife, fixing it first with a hook, and used sometimes long-stemmed needles, sometimes short curved ones passed with a needle-holder like that of Roux's; and at other times insert-pins, surrounded with threads to bind the edges together. His patients during the operation kneeled, or were kept on their hands and knees, and the vagina exposed by introducing a hook speculum—really an instrument similar to the Sims' speculum. In order to defend the wound against the action of the urine, and keep the bladder empty, the organ was opened above the pubes, a catheter introduced, and the patient kept upon her belly, buckled to a leather cushion in which a hole was cut out. On the sixth day, his ligatures were removed, injections of cold water having been thrown into the bladder, through the catheter, and the vagina, through an œsophagus tube, every half-hour. In eighteen operations, three cases were reported cured; a success pronounced extraordinary, and greater than that of any other surgeon.

Dieffenbach, to expose the fistula, used a bi valve speculum; seized the margins with a hook or long forceps while they were being pared, and united them with the interrupted suture. The position which he preferred having the patient for the operation, was on the back, and the catheter was used continuously to drain the bladder. In his hands, the results were most discouraging. On one woman he operated eighteen times, and then failed to effect a cure. So great was his interest in the subject, that he had gathered wards full of women afflicted with this malady, from all parts of the country, but, as he states himself, making very few cures.

Beaumont, after paring the edges, introduced double threads; through the loops on one side was inserted a cylinder of some round substance parallel with the border of the opening, and along the other side a second, over which the free ends of the sutures were tied, forming a quilled suture.

Thus far the fistula under consideration has proved more than a match for the skill of the ablest of the old world, and now we turn to American surgery to have our hopes revived and faith strengthened.

In 1839, Dr. George Hayward, of Boston, reported a case, (see p. 7,) which he had succeeded in curing. His patient was a lady, aged 34 years, in excellent health, and who had been delivered 15 years previous with instruments after, being in labour three days, during which time no urine had been drawn from the bladder. A slough was the consequence, opening a communication between the vagina and bladder. Attempts had been made with the catheter, and also by cauterization to close this fistula, but without success. Dr. Hayward operated on the 10th of May. The patient was placed on the edge of the table, upon her back, very much as in the position for lithotomy; the parts well dilated, (he does not state how); a large bougie passed into the bladder, and carried back to the fistula, by which he was able to bring it into view. Thus fixed, an incision was made round the opening with a scalpel, and after the bleeding ceased, the membrane of the vagina was dissected away from the bladder to the extent of three lines. Three silk threads were next introduced by curved needles through its sides, drawn together and knotted firmly down; a short silver catheter, prepared for the purpose, was placed in the bladder, and the patient put to bed. In five days she was examined, the stitches cut away, and the parts found to be solidly united. In 1851, Dr. Hayward published an account of eight additional cases, making in all nine cases, three

of whom had been cured after twenty operations.

In these cases of Dr. HAYWARD there was nothing new, unless it was the peculiar catheter; it had often been practised before, but in his hands was crowned with a success, calculated to inspire confidence in the curability of the affection.

In 1847, Prof. JOSEPH PANCOAST succeeded in effecting two cures. The posterior or upper lip of the fistula was exposed by a Charriere speculum, and split one half inch deep in a longitudinal direction; with a pair of scissors and bistoury, the lower lip was next pared into a wedge-shaped form, and this tongue of raw tissue, drawn into the grove in the upper border, by what he called his plastic suture. The bladder was kept empty by a gum elastic catheter, and after the second day, injections of zinc were thrown into the vagina to give tone to the parts. On the fourth day a solution of the nitrate of silver was applied over the line of apposition, to favor union by granulation, where that by the first intention failed. In this method, we have a repetition of the plan of BLASIUS.

In the same year, Dr. JOHN P. METTAUER, published in the *American Jonrnal of Medical Sciences* for July, the history of a fistula, which he cured by inserting leaden sutures, after paring its circumference. The bowels were kept closed for eight days, and the stitches allowed to remain thirteen days, during which time a short catheter was worn in the bladder. The metalic thread used by the operator in this instance, was undoubtedly the procuring cause of so fortunate a result. Just at this point commence the most important facts in the history of our subject.

In 1852, Dr. J. MARION SIMS, of Alabama, solved the whole difficulty, and placed this vexed and perplexed operation, on a solid and substantial foundation. The discoveries which he advanced as peculiary his own, were the following:

1st. A method by which the vagina could be thoroughly explored, its capacity greatly increased, and the fistula made readily accessible.

2d. The introduction of a suture, which would remain a long time, without inducing either irritation or ulceration.

3d. A mode of keeping the bladder drained of the urine.

The first was accomplished by placing the patient on the knees and elbows, the hips being elevated, and using a speculum, which from its form is called the duck-bill speculum. The second, by substituting the ordinary thread with a metallic (silver) one, aided by leaden clamps; and the third, by a self-retaining catheter.

There can be little doubt that Dr. SIMS reached this important combination of improvements, quite independent, perhaps, of foreign aid; yet, by reference to the historical enumeration of methods which I have detailed, it will be found almost all have been conceived and executed by predecessors. In illustration of this, let them be examined in detail.

First, the position. This was recommended and practiced both by CHELIUS and WALTER; the later of whom employed a blunt hook for opening the vagina, which executed in a good measure, the office of the duck-bill speculum.

Second, the suture apparatus. In 1834, GOSSET, of London, employed the metallic thread; DEYBER, also; the former gilded wire; the latter lead. BEAUMONT carried his sutures around little cylinders, placed one on the other side of the fistula; thus resembling the clamps.

Third, the self-retaining catheter. Dr. METTAUER employed, in his case, a short instrument which was worn in the bladder during the cure, so that really all these novelties, have, at some time or other, engaged the notice of surgeons, during the long years of experiment and device which have marked the history of vaginal fistula. Still, however, the undivided honor of combining, modifying, and utilizing, all belongs, and only belongs to Dr. SIMS.

Dr. Sims' Operations.

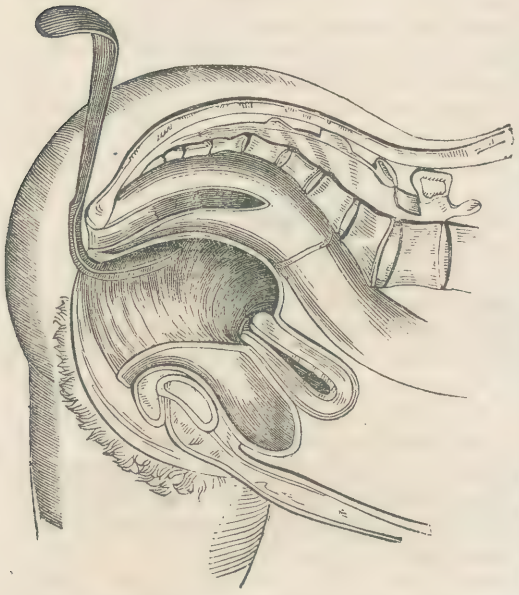
Position of the Patient. A table is selected, 2½ by 4 feet, covered with folded comfortables; on this the patient is placed, resting on her elbows and knees, the latter separated six or eight inches, the pelvis being elevated, and the shoulders depressed. An assistant on either side placing a hand in the fold between the nates, the fingers extending quite to the greater labiæ, simultaneously draw them asunder. The viscera gravitating toward the thorax, and the air rushing into the vagina on the separation of the walls of the vulva, distend the canal so as to offer a very complete interior view. To increase its capacity for a more thorough exploration, the SIMS speculum (Fig. 5) is next introduced, and drawn back to-

FIG. 5.

Vaginal speculum similar to SIMS'—BOZERMAN'S pattern.

ward the sacrum by one of the assistants. (Fig. 6.)

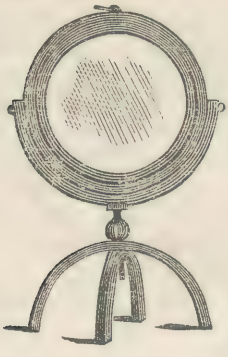
Fig. 6.



Exhibits the speculum in situ, with the relative position of the organs.

If the illumination is not sufficient, a mirror (Fig. 7) may be used to reflect the light into the canal.

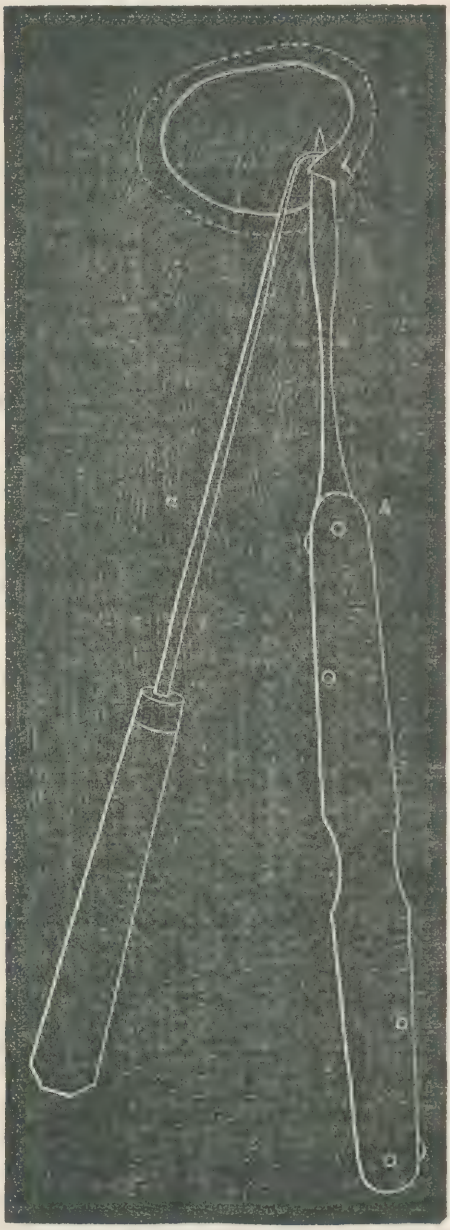
Fig. 7.



Mirror to throw the sunlight into the vagina.

Paring the Fistula. For this purpose, a small sharp hook, or tenaculum, is passed into the circumference of the fistula, and while thus brought into proper position, and made sufficiently tense a long, sharp-pointed bistoury is applied (Fig 8) vesical mucous membrane concealed the margin of the fistula, interfering with its proper management, a soft sponge should be passed through the opening into the bladder, and allowed to remain until the stitches are ready for adjusting. To remove the blood from the parts during the freshening of the parts. The lining membrane of the bladder he does not disturb, unless it pro-

Fig. 8.



Tenaculum fastened into the fistula, and the bistoury applied to its circumference.

trudes through the opening in excess. When the fistula was very small he hooked the tenaculum through both sides, and raising it up, cut out a circular portion with the bistoury. During the operation, little mops (Fig. 9) should be on hand. These are readily made by securing small bits of sponge to whalebone or rods of wood.

Application of the Clamp Suture. This may may be divided into three stages: the introduction of the silver wires; the attachment of the clamps; and the approximation of the wound, with the securing of the apparatus.

First. *Introduction of the Sutures.* In the execution of this he passed a silk thread through the eye of a long, awl-shaped needle (Fig. 10), and

Fig. 9.

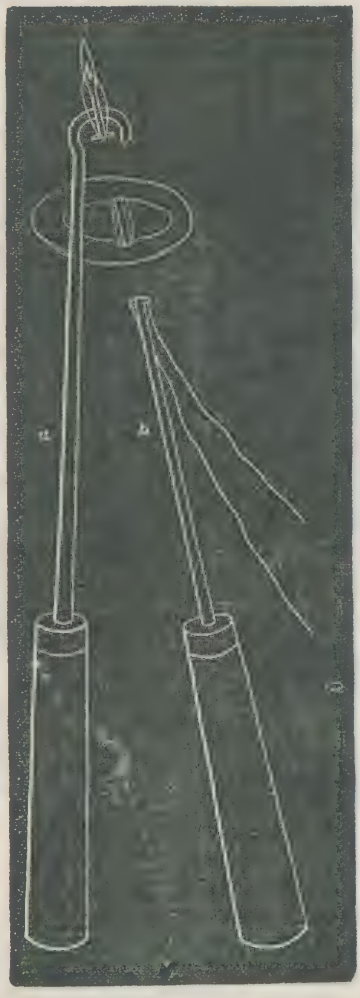
A sponge mop.

Fig. 10.

Needle for passing sutures.

entering it half an inch from the freshened edge of the opening, carried it downward, and forward, across the wound, and bringing it out half an inch above the raw margin of the opposite side; taking care not to include the mucous membrane of the bladder. As the needle passes through the distal side, the tissues will require support, that they press not away from the instrument; and thus counter-pressure is supplied by a blunt hook behind the needle (Fig. 11.)

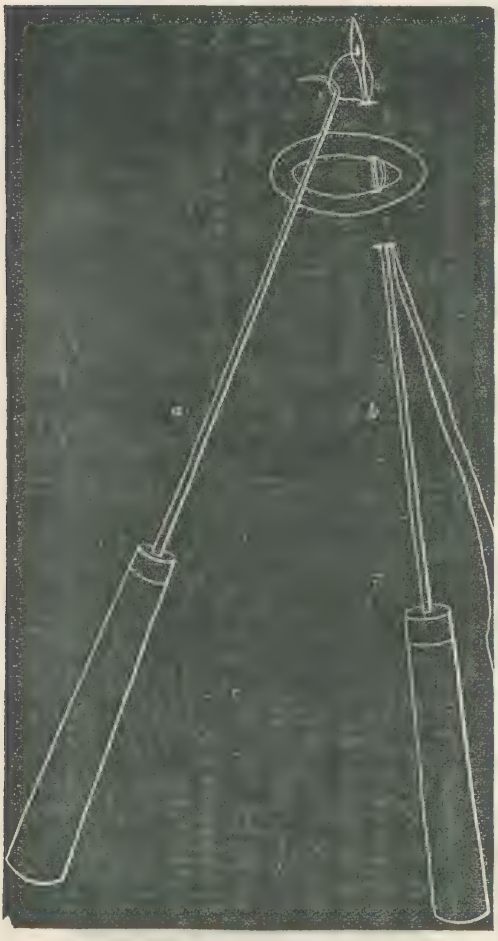
Fig. 11.



The blunt hook between the needle and tissue to favor its passage.

As soon as the needle emerges, and the thread comes fairly into view, a long tenaculum is hooked into the loop, and one end drawn through (Fig. 12),

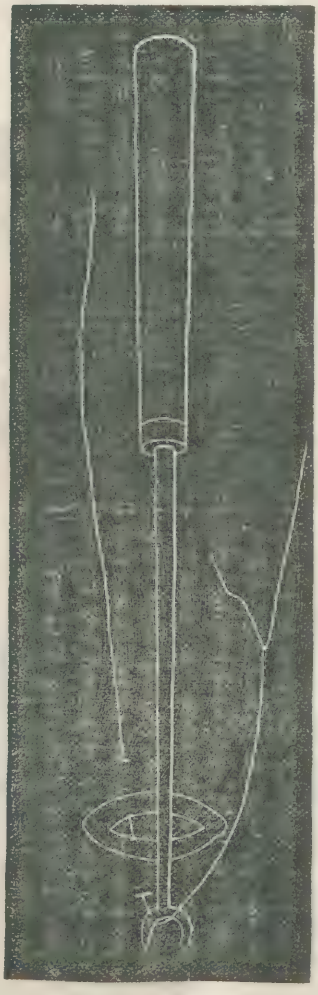
Fig. 12.



Exhibits the tenaculum drawing the thread through.

after which the needle is withdrawn, leaving the suture in its track. In this manner the requisite number of threads are deposited across the wound. The next step consists in substituting the silver threads for the silk, which is readily accomplished by binding the end of the former into a crook or link, and making fast to it the distal end of the latter. By drawing on the proximal end of the thread the wire is towed into its place; the threads being only designed to favor the insertion of the wires. In this process a difficulty very naturally occurs, that of the thread, or the wire as it may be, cutting into, or even tearing out of the tissue, on the distal side of the wound, as they are pulled upon. To counteract this he employs a crescent-shaped fork to push the suture above the orifice while traction is being made (Fig. 13.) The silver sutures being all passed,

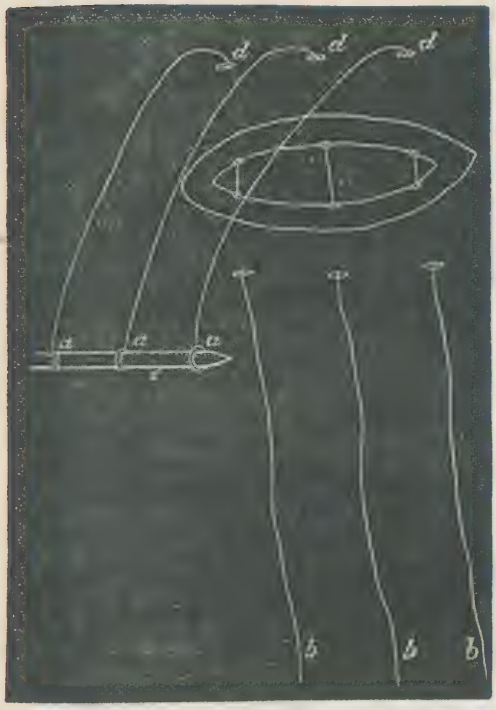
Fig. 13.



A silver thread secured to the silk one, with the fork in situ to favor the passage through the upper puncture.

the second stage of the process consists in the *Attachment of the Clamps.* Two little bars of silver or lead, a trifle longer than the fistula, are perforated with a number of holes, corresponding to the number of sutures. Through these the upper end of each wire is passed, and fastened by winding it about the bar, or passing it through a shot. (Fig. 14.) This completed, the lower

Fig. 14.

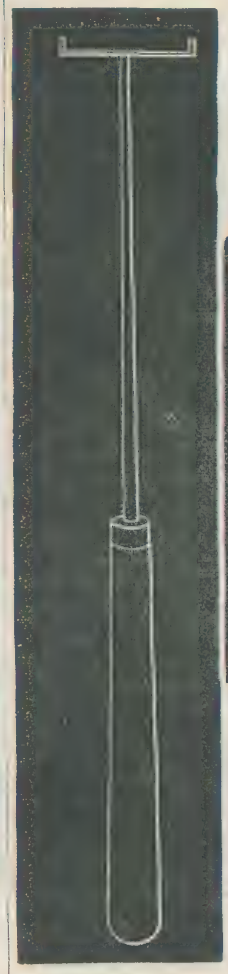


Upper clamp attached.

ends of the wires are drawn upon, when the clamp will be carried into the vagina, and take its place above and parallel with the upper border of the wound. During this adjustment, a fork of another kind (Fig. 15) is used as a pulley, to prevent the wires cutting into the flesh. In the same manner, the other ends of the wires are passed through the second clamp. (Fig. 16.)

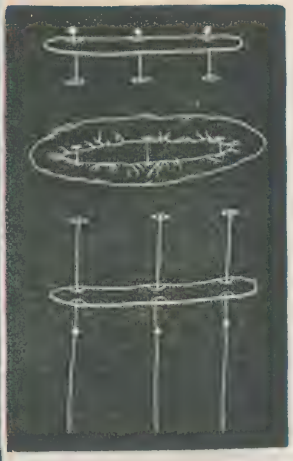
The Adjustment. The proximal ends of the wires being drawn upon, and the clamp pushed up with the fork at the same time, the raw surfaces are brought in contact with each other, in doing which, care and judgment are requisite that they be pressed together sufficiently tight to prevent gaping, and yet not so forcible as to endanger strangulation or ulceration. To maintain the apparatus in position, a perforated shot is passed down each wire, and being pressed against

Fig. 15.



The adjusting fork.

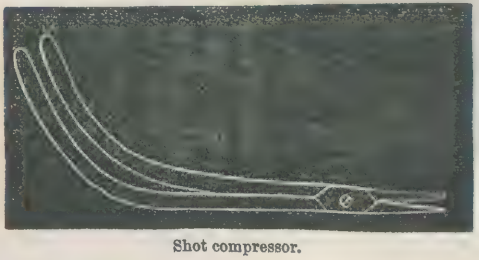
Fig. 16.



Both clamps on the wires, and perforated shot behind the proximal one.

the clamp, is then fastened by compression with a strong pair of forceps. (Fig. 17.) The wires are next cut off short, and bent over the shot.

Fig. 17.

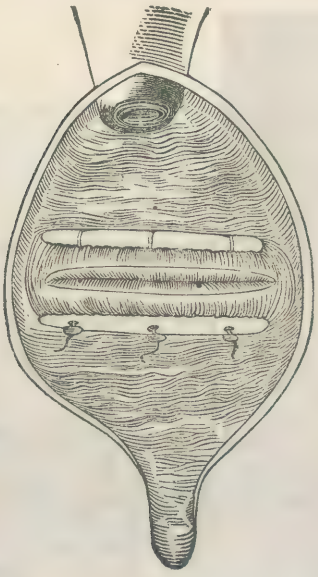


Shot compressor.

The appearance of the wound, when adjusted,

with the suture apparatus in position, is represented in Fig. 18.

Fig. 18.



Exhibits the wound adjusted with the suture apparatus.

The After-Treatment. The operation being completed, the patient is placed in bed, on the back, a self-retaining catheter placed in the bladder, (Fig. 19,) and a full dose of opium administered; to be repeated as often as may be necessary to keep the bowels quiet. The diet is to consist of crackers, and coffee or tea. During the progress of the case, the vulva and other portions of the external genitalia are to be bathed with cold water, a bed-pan being placed under the nates, to collect the fluid as it runs from her person. The urine is to be received on old cloths, as it drops from the catheter. On the ninth or tenth day, the clamps and sutures are to be removed, and if well, the patient required to wear the catheter for several days longer. About the twelfth or fifteenth day, the bowels should be opened by some mild cathartic.

Fig. 19.

Self-retaining catheter of Sims.

Such are the general features of Dr. Sims' operation, and from this dates the successful surgical management of vesico-vaginal fistula.

Dr Sims' Later Operation.

To the clamp there are objections, and these were soon discovered by Dr. Sims, and the operation so modified as to add greatly to its simplicity and perfection. The modifications consist in the introduction of the metallic threads without those of the silk, and dispensing entirely with the clamps, adjusting the wound and securing the wires by twisting alone, which he accomplishes by drawing, with a pair of forceps, the ends of the wire through the slit at the end of his adjuster, (Fig. 20,) and then, while thus firmly held, the forceps, by a rotary movement, twirls the wires about each other, so as to make them secure.

Fig. 20.

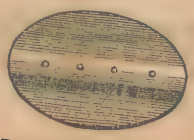
Sims' method of coaptating and securing wires by an adjuster and forceps.

Operation of Dr. Nathan Bozeman,

Formerly of Alabama.

The name of Dr. BOZEMAN is well known, both in this country and abroad, in connection with vesico-vaginal fistula. Several papers from his pen have appeared on the subject, all proving unusual dexterity and success as an operator. The chief novelty in his method is what he terms the button suture, (Fig. 21,) com-

FIG. 21.



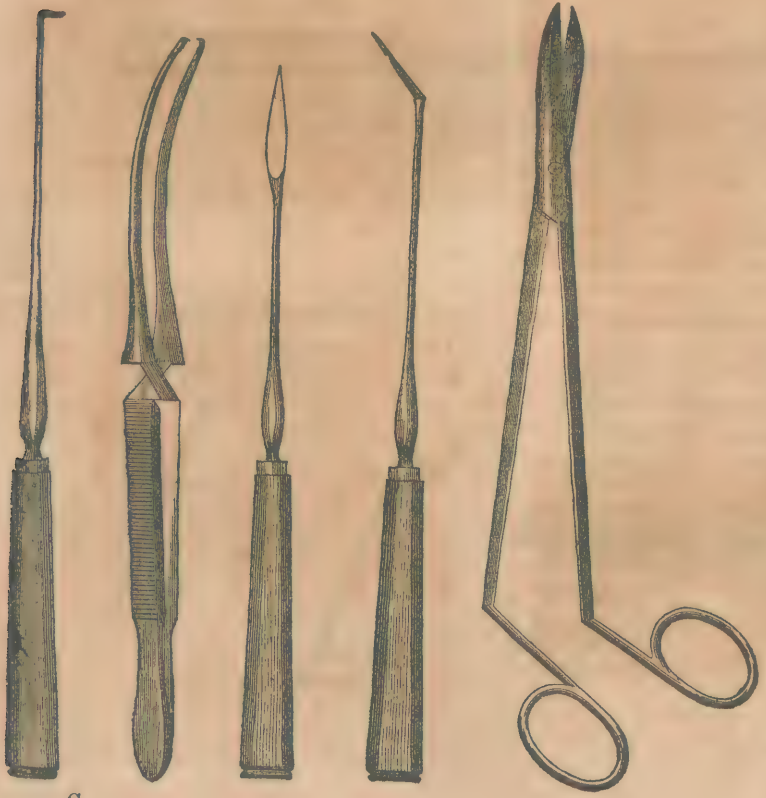
BOZEMAN'S lead button.

posed of a piece of thin lead cut to fit the opening, and having in it small holes answering to the number of wire sutures employed; also leaden crotchets to secure the button. The patient is placed in the position recommended by SIMS; a duck-bill BOZEMAN speculum introduced; and while the parts are controlled by a long tenaculum or forceps, the edges are pared by straight and curved bistouries; sometimes using the curved scissors. See Figs 22, 23, 24, 25, 26. This done, the requisite number of silk threads are introduced with short, straight, spear-pointed needles, from half an inch to one inch in length, grasped in the jaws of a needle holder. (Fig. 27.) The needle is entered some distance from the freshened border, and carried obliquely through, first the proximal side of the fistula, penetrating as deep as the vesical mucous membrane, and then, after being adjusted to the needle-holder, through the distal side, being drawn through with a pair of long forceps, counter-pressure being made with a blunt hook, similar to SIMS' instrument. The threads being all passed, each one is securely fastened by its lower end to a silver wire, and as the one is drawn out, the other

FIG. 27.

BOZEMAN'S needle holder—a long stem, with two claws at its extremity, with a canula to slide up and down, closing and opening the jaws. Also examples of the BOZEMAN needle.

FIG. 22. FIG. 23. FIG. 24. FIG. 25. FIG. 26.



C

takes its place, a fork being used, as in SIMS' method, to guide the sutures and support the soft parts.

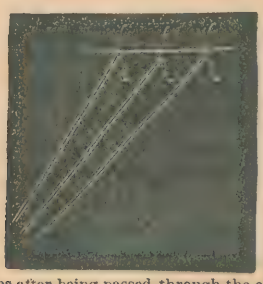
The next step consists in passing both ends of each suture through an instrument called an adjuster, (Fig. 28,) and drawing on the wire, as it is run down, the wound is brought together and a set given to the thread, which contributes to so maintain it. (Fig. 29.) The wires are next passed through the perforations in the lead button, and the latter pressed down upon the line of approximation, and made to conform to the surface against which it rests by means of an instrument represented in Fig. 30.

To secure the button firmly in place, pieces of lead or crotchets are run down the wires (Fig. 31) and compressed, by a pair of strong forceps, both on wires and button. The operation is finished by cutting off the wires a short distance above the crotchets, and turning an end down on either side. (Fig. 32.) The patient is placed in bed, on her back, the catheter introduced, the bowels kept closed by opium, and an unirritating diet allowed.

FIG. 28.

Adjuster.

FIG. 29.



The sutures after being passed through the adjuster.

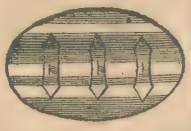
FIG. 30.

BOZEMAN'S instrument, having an angular and concave extremity, to model the button to the surface of the vesico-vaginal septum.

FIG. 31.

Exhibits the crotchets being passed down the wires.

FIG. 32.



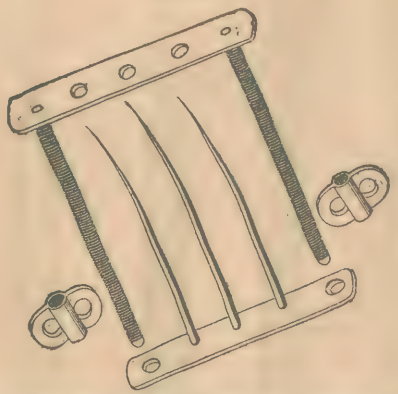
Button and crotchets adjusted, wires cut and turned down.

Operation of Dr. J. Hunter McGuire,

Formerly of Philadelphia.

The patient being placed in the position recommended by SIMS, the edges are to be pared with a long-handled bistoury, and brought together with the instrument delineated in (Fig. 33.)

FIG. 33.



Representing MCGUIRE'S instrument for vesico-vaginal fistula.

This consists of a plate of silver, having a hole near each extremity, and three needles, slightly curved; soldered to its front surface a second silver plate, of the same size and shape as the first, having fastened to each end a thread-screw, and three holes corresponding in position to the three needles on the other plate, and lastly, two female screws.

Application. With a strong pair of forceps the plate supporting the needles is grasped, their points passed through the posterior lip of the fistula, and brought out through the anterior one. Through the perforations at either end of this plate are next passed the thread-screws of the other plate, and through its perforations the extremities of the needles. The female screws are next run down the thread, forcing the clamp together, until the edges are in close contact.

Operation of Dr. J. Y. Simpson,

Of Edinburgh.

The operation of this distinguished Scotchman, certainly one of the representative medical men of the age, differs chiefly in substituting, for the Bozeman button, a wire splint, prepared as follows: He takes ten or fifteen strands of metallic thread, and twists them into a cord, the ends of which are then doubled over each other, and plaited round into the form of a circle, which may, being very flexible, be pressed into any figure desired. With an awl, or any sharp-pointed instrument, the required number of holes may be made, by passing it through among the wires. These perforations are for the iron thread sutures. For the introduction of the sutures, Dr. Simpson uses an ingenious needle (Fig. 34), together with a crotchet (Fig. 35), and a hook (Fig. 36.)

The needle consists of a hollow tube, with a needle point, one opening being near the end, and the other near where the handle and shank join.

The mode of using is readily understood. The wire thread being pushed within a short distance of the upper orifice, the needle is carried through both sides of the fistula, after which, the thread is thrust forward. As soon as it appears, it is to be seized with a pair of forceps, and held while the needle is being withdrawn, thus leaving the suture in situ. By a repetition of this process the requisite number are introduced. He prefers the iron wire, as more easily managed than silver. His sutures are next passed through the

Fig. 34. Fig. 35. Fig. 36.

Dr. Simpson's needle, with a wire inserted.
Simpson's crotchet and hook.

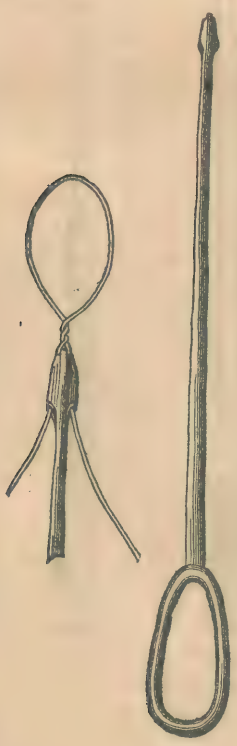
openings in the wire splint (Fig. 37), the latter being pressed down over the line of apposition, and the wires secured by twisting with his wire

Fig. 37.

Simpson's wire splint, the threads being carried through the openings in it.

twister (Fig. 38), constructed on a plan which was suggested by Dr. Cogiill.

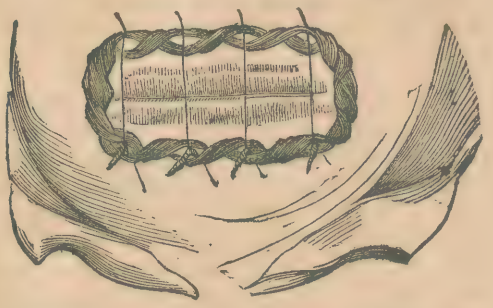
Fig. 39. Fig. 38.



Simpson's wire twister.
The same, with the wire in, and partly twisted.

The ends of the metallic threads are next clipped off close to the splint (Fig. 40), and the after-treatment conducted on the same principle as that of other operators.

Fig. 40.



Simpson's splint adjusted, wires secured across the lower bar.

Operation of Dr. Isaac Baker Brown.

For paring the fistula he uses straight and angular knives; for the passage of the metallic sutures, Simpson's needle; and for securing the threads, little crotchets or clamps of lead, run down, and compressed with a strong pair of forceps. His operation dates 1860.

Operation of Dr. Robert Battey.

The peculiarity of Dr. Battey's method consists in a metallic (lead) button (Fig. 41), having

Fig. 41.

Battey's button.

a series of holes on one border, and on the other a corresponding number of slits. The upper ends of the wire after being inserted are passed through the holes, the other ends forced into the slits, and both fastened by twisting them about each other. He claims for it a water-tight adjustment.

Operation of Collis,
Of Dublin.

This method, described in 1862, consists in splitting the vesico-vaginal septum along the entire circumference of the fistula; turning the vesical side toward the bladder, and the vaginal side toward the vagina; the sutures he employs are silk, and introduced as double threads, with Liston's needles secured on long handles. When the threads are all inserted, there will be a row of loops on one (the upper) side, and two free ends on the other side of the fistula. A vulcanized quill is next passed through the loops above, and a second placed along the lower border of the opening, and the approximation effected by tying the free ends of the threads firmly around it; it is a quilled suture.

Operation of Dr. Alfred Meadows,

Physician-Accoucheur to the General Lying-in Hospital, London.

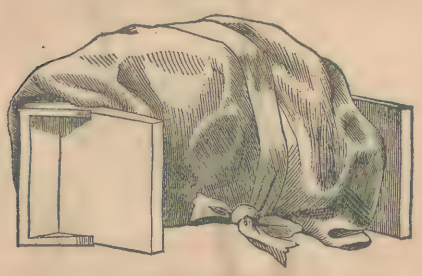
The novelty of this method consists in allowing the patient, after the parts are pared, and closed with silver threads, to rise and go about as usual, dispensing altogether with the catheter. He publishes two cases, which it is alleged were treated successfully in this way. I should not feel disposed to subject a patient to such a treatment without some further accumulation of data.

Agnew's Operation.

Having presented the various operations in historical succession, I proceed to state the plan of treatment practised by myself for several years, with results the most satisfactory. Nothing original is claimed for the method. Except in a few particulars, it does not differ from modes pursued by others.

Arrangements for the Operation. Among the first things to be attended to is the bed on which the patient is to lie. This should be a firm mattress; but should the circumstances of the patient be such as not to command this, a feather bed may be well beaten down and covered with two or three comfortables, so as to give it a certain degree of solidity. Over that part where the hips are to rest there should be spread a strip of oil-cloth, and over this a folded sheet, the object being to protect the bed. A low stool should be procured and turned upon its side, over which should be placed one or two folded blankets, and over these again a piece of oil-cloth, the whole to be secured by a few turns of a roller. (Fig. 42.) This forms an excellent support, across which the patient is to be turned.

Fig. 42.



Stool covered, over which to place the patient.

There will be required two basins, one bucket for cleansing, and another for the bloody water, several mops or sponges; readily formed by securely tying small pieces of soft clean sponge to the ends of sticks or pieces of whalebone; a six or eight-ounce syringe, and some pieces of ice. There is some difference of opinion as to the exhibition of an anæsthetic. In no operation do I think its exhibition more imperative than in vaginal fistula. The position and exposure are calculated to shock the feelings of any female possessed of ordinary sensibility, and I have in all cases administered this agent with the most satisfactory result.

Assistants. There will be required four assistants; one for the sponges, one for each lower extremity, and one for the anæsthetic. As such an operation is rarely completed in less than half an hour, and may be prolonged to even two hours, the assistant having charge of the anæsthetic, should be perfectly familiar with his duty.

Time to Operate. As a good sunlight is all important to the successful execution of this operation, the forenoon of a clear day should be selected, and a room whose windows have an eastern or southern exposure.

Instruments. The instruments which have been and are still being invented for this operation constitute a most formidable armamentarium. I shall content myself by presenting a list of such as compose my own case, and which I have found to answer every purpose.

A duck-bill speculum (Fig. 43); two long-handled scalpels (Fig. 44); one pair of long rat-toothed forceps, slightly curved, with an attachment at the end of the handle, embodying the adjustor, for running down the wires and the crotchet to favor by counter-pressure the passage of the needle through the distal side of the fistula (Fig. 45); a needle-holder which can with one hand be detached from the needle, or again made to grasp it, and by which the needle can be introduced at any angle (Fig. 46); one pair of long scissors, curved a little on the flat (Fig. 47); a shot compressor (Fig. 48); this instrument, to be efficient, should have strong handles, and the articulation less than half an inch from their extremities; a shot perforator (Fig. 49); two sigmoid self-retaining catheters (Fig. 50); the openings in which should be very small, otherwise the mucous membrane of the bladder will insinuate itself through them, and become strangulated, rendering its withdrawal impossible without tearing the incarcerated portions; one dozen of needles; these should be constructed with great care, seven-eighths of an inch in length, slightly curved for one-fourth of an inch at the extremity, the cutting-edge confined only to the extent of the curve, and sufficiently wide to allow the proximal part to pass without tugging and pulling, as is too often the case. The eye should be well sunken, so as to bury the thread, and the whole so tempered as to bend, rather than break; fine silver wire; some No. 3 shot, and twelve or

Fig. 43.

Fig. 44.

Fig. 45.

Fig. 46.

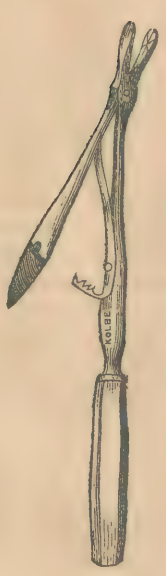
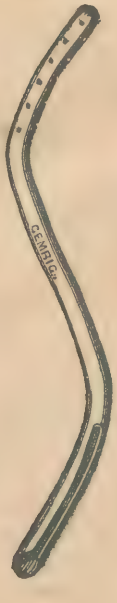


Fig. 47.

Fig. 48.

Fig. 49.

Fig. 50.



fourteen inches of light gum-elastic tubing, to slip over the end of the catheter, and thus convey the urine to a bottle or other vessel, placed between the patient's limbs.

Operation.

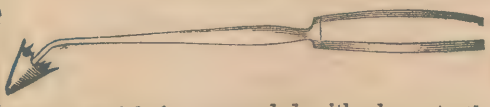
The patient having removed all her clothing, save a chemise and night-gown, lies down upon the bed, and is brought under the influence of the anæsthetic, nothing having been communicated to her about the position in which she is to be placed. When sufficiently unconscious, the stool, prepared as directed, is placed across the foot or side of the bed, and the patient carefully lifted, and placed over it, resting on her abdomen, two or three pillows being laid under her breast and head in such a way as to form an inclined plane. The head must be turned on one side, and a free access of fresh air admitted to her face. The person having charge of the anæsthetic must take his position so as to have a full command of the pulse and countenance, keeping her perfectly passive, without profoundly impressing her. There are periods in the operation when very little need be given, as when the surgeon is waiting for the bleeding to cease; and again, when the apposition and adjustment are being effected; at such times very little pain is inflicted. The legs, being next flexed upon the thighs, are given over to assistants. The operator now takes the speculum, smeared with oil, and introducing it into the vagina, commits it to one of the assistants having charge of the limbs, who draws it firmly toward the rectum, when the air, entering the vagina, expands the tube in the most satisfactory manner. (Fig. 51.) The surgeon now takes his seat in a position to command a full view of the fistula, and seizing its lower margin with the forceps, enters the knife from three-eighths to half an inch from the opening, bringing it out just short of the vesical mucous membrane, and by successive sawing movements, paring away, until the entire circumference of the fistula has been freshened. Should the mucous membrane of the bladder protrude, a piece of sponge may be pressed through the opening to keep it out of the way. The greatest difficulty in executing this part of the operation will be experinced at the angles, or commissures of the opening; and too much care cannot be observed, that no point be overlooked. If it is properly done there should be at least three-eighths of an inch, or more, of oblique raw surface, visible everywhere around the fistulous opening. The tendency to inversion of the vagino-vesical septum is so great, that unless a considerable extent of tissue is removed, there will be danger of not having a sufficient amount of raw surfaces apposed to secure adhesion. There will be cases and situations in this freshening process, where the scissors come in more advantageously than the knife; such will naturally occur to the surgeon as he proceeds. Where the fistula is very small, receiving, for instance, only the end of an ordinary probe, some advise transfixing with a long awl-shaped instrument, and, raising the sides, by a single stroke of the knife cut out a sufficient amount of tissue. There is a very ingenious instrument (the author of which I cannot recal), (Fig. 52), with a conical extremity standing at an angle with the shank, the base of which is surrounded with sharp teeth, designed for controlling the edges of such fistulæ. The apex of the cone is inserted into the opening, and pressed through; then, by withdrawing it, the teeth become fixed into the circumference, when the knife may readily excise at a stroke the included tissue.

There is another instrument, (Mr. Hilliard's, of Glasgow,) designed to secure the edges of large fistulæ while being pared, and which con-

Fig. 51.

Exhibits the woman resting on her abdomen over the stool placed across the bed, and the assistants supporting the limbs, one of them also holds the speculum, which has been passed into the vagina.

Fig. 52.



sists of a long shank, with a small thread at its extremity, on which may be secured various sized forks for transfixing, and on this shank a sliding rod, bearing a bar which may be pushed forward, and then drawn back between the forks, so as to compress and secure the included tissue. Figs. 53 and 54, exhibit the instrument and its application. There is no objection to having all

Fig. 53.

Fig. 54.

these instruments, if the taste and the circumstances of the surgeon allow it; but that such are essential, or even necessary to the proper execution of the operation, is certainly not correct.

Arrest of Hemorrhage. The bleeding which follows the foregoing process is not generally very profuse, stopping under the application of cold water, or a lump of ice inserted into the vagina, or even under the styptic influence of the atmosphere; but occasionally cases will be met with where the discharge of blood proves both copious and persistent. To control such irregularities, I have found a small stream of cold water, steadily directed on the parts from a large syringe, singularly efficacious. Should this not succeed, the stitches should be inserted, and the edges drawn firmly together, when it will cease, just as the approximation in a case of hare lip arrests the hemorrhage.

The Direction of Approximation. Most operators favor an approximation of the sides of the fistula transversely, yet there are no reasons why they may not be closed longitudinally. Case 15 is an example in point. Such conditions as the following, will indicate such an approximation; as when the fistula runs to any great extent longitudinally; or when it is low, and either so great a loss of substance, or so unyielding a character of tissue, as to make too much traction when brought together on the lower wall of the urethra, endangering a subsequent incontinence of urine.

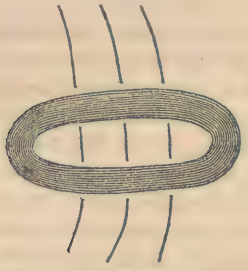
Introduction of the Sutures. This is regarded by many as the most difficult part of the operation. The needle bearing the wire is placed in the grasp of the needle-holder, and whilst the proximal border of the fistula is steadied by the forceps, is entered at the middle of the wound, three-eighths of an inch from the freshened surface, brought out at the mucous membrane of the bladder, (not including it,) carried across the opening, made to enter the opposite side, and emerge the same distance above its raw surface. The needle-holder is now disengaged from the needle, by simply pressing the upper blade of the instrument while the spring is being pressed forward by the thumb, made to seize the extremity now through the upper border of the fistula, and while the parts are supported, by applying to them the hook at the end of the forceps, (Fig. 55,) the needle is drawn through, turned and

Fig. 55.

Needle in the grasp of the needle-holder carried through the fistula, and the hook at the end of the forceps placed between the tissues and its point, to favor its passage by counter-pressure.

brought out of the vagina. When the sides of the opening are too wide apart, the needle cannot be made to penetrate both at once, and therefore it must be drawn through them in succession. In this manner the requisite number of threads are inserted. the distance between them being a trifle less than one-fourth of an inch, (Fig. 56.)

Fig. 56.



Exhibits the threads passed.

As each is deposited in its proper place the needle is to be removed, the ends of the wire twisted together, and given in charge of one of the assistants supporting the thighs.

Adjustment. In the important stage of adjustment, the wire first inserted is separated from the others, and the ends passed through the hole of the adjuster at the end of the forceps. As the latter is slid down, the wire is drawn upon until the edges of the wound are brought into accurate contact. The set which the wire thus obtains, is sufficient of itself temporarily to maintain the apposition. All of the threads are subjected successively to this process, and while being done, care must be observed that the edges be properly everted, so as to secure the contact of raw surfaces, and also, that no clot be permitted to lie between them.

The next step is to secure the sutures permanently, and for this purpose it has been my almost uniform practice to use perforated pellets of shot. These are run down the wires, then seized with the strong compressing forceps, and while the metallic threads are being drawn upon, pressed firmly against the line of adjustment, and then compressed so as securely to maintain their position. The sutures are next cut off, close to the shot, leaving no projecting ends to irritate the soft parts, (Fig. 57,) the speculum with-

Fig. 57.

Exhibits the edges of the wound apposed, the shot compressed on the wires, and the latter cut off.

drawn, the blood sponged away, and the patient placed on her back, on the bed prepared for her reception, after which the catheter is to be introduced into the bladder, and carefully watched, to see if the urine flows freely through its canal. In order to keep the clothing of the patient and the bed perfectly dry, a light piece of gum elastic tubing may be drawn over the end of the catheter, and its other extremity inserted into a bottle, which shall lie between the patient's limbs; or a small earthen vessel or cup may be placed beneath the instrument, and receive the urine as it drops from its extremity.

After Treatment. Too much importance cannot be attached to the after management of the case, as on this will depend, in a great degree, the success of the operation. The nurse should understand the manner of introducing and removing the catheter; if she does not, five minutes instruction, by showing her the mode, will suffice to enable her to do so, unless she be unusually dull of apprehension or imitation. It should be examined frequently to see that no obstruction exists, that it does not become misplaced, and that the urine drops freely. This is imperative, for it often happens for the first twelve or twenty-four hours, that small coagulæ of blood are expelled from the bladder, and which may obstruct the instrument. Two catheters should be always on hand, so that one may be introduced immediately on the withdrawal of the other. After thirty-six or forty-eight hours, twice a day will be sufficient to change the instrument, in the morning, and at bed time; and it can best be cleared of mucus, and other matters, by inserting the nozzle of a syringe into one end, and forcing through it a stream of water. If the bladder is kept perfectly empty, the collapsed state of its walls will prevent all tension on the sutures, and diminish greatly the chances of urine getting between the edges of the wound, an accident which will almost always defeat the union. The position best suited to the patient is that on the back, although there are no objections to her turning for a short time on the side to relieve a sense of weariness or discomfort.

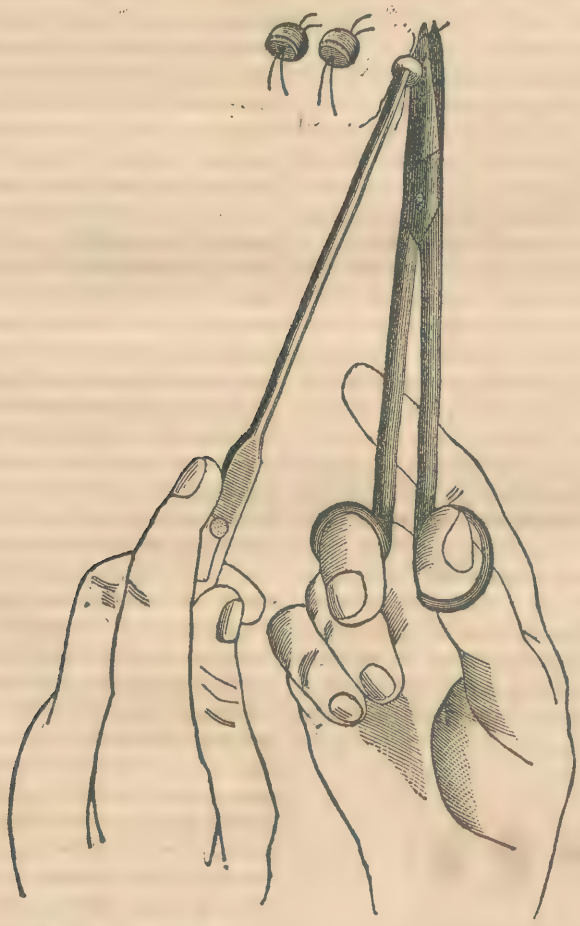
The next important thought is to lock up the bowels, and keep her free from all pain and uneasiness. For these ends we have no better agent than opium. One or two grains should be given as soon as she is adjusted in bed, after which, from a third to half a grain, three times a day, for five or six days, will answer. From this, until the removal of the stitches, the fourth of a grain, morning, noon, and night, will maintain the effect produced. I do not think there is any ad-

vantage in exhibiting this drug, beyond what is just sufficient to keep the bowels quiet; more than this tends to impair the digestion, disturb the secretions, and destroy the appetite. Occasionally the patient will be seized with an uncontrolable desire to bear down, or an involuntary contraction of the bladder, often driving the catheter from the urethra; in such conditions we must resort to enemata, consisting of two or three tablespoonfuls of flaxseed tea, or starch-water, with forty drops of laudanum, repeated once or twice in the twenty-four hours, if necessary. No injections of water into the vagina should be practiced, as directed by some; nor any explorations with the finger; the vaginal mucus which collects about the wound, and the sutures, does no harm whatever. Should the patient be annoyed with tympanitic distension of the abdomen, which not unfrequently occurs, a little camphor-water and aromatic spirits of ammonia may be given, or a little turpentine in mucilage of gum acacia, from time to time.

Diet. The patient should be allowed a liberal but unirritating diet. Milk, soft-boiled eggs, cream toast, chicken, or beef broth, mutton chop, with coffee and tea, offer a sufficient list from which to select her food.

Removal of the Sutures. On the eighth or ninth day after the operation, the stitches should be removed, and for this purpose the patient may be placed on the side, her limbs well drawn up, and hips over the edge of the bed, before a good light; or she may rest on her knees and elbow. The removal of the sutures not being painful, the administration of an anæsthetic is unnecessary, unless the patient be timid, and shrink from the ex-

Fig. 58.



Shows the suture seized with the forceps and being clipped by the scissors. From Simpson's work on Diseases of Women.

posure; in which event it should be given. The number of assistants requisite for the object in view will be determined by the taking or not taking an anæsthetic. In the former, there will be needed one to take charge of the ether or chloroform, and two to support the limbs and manage the speculum. In the other case, a single assistant will be sufficient. The catheter being removed, the patient is placed in position, and the speculum inserted and given to the assistant. The parts being satisfactorily exposed, the surgeon clears away the mucus from the sutures with a piece of moistened sponge; then taking hold of a shot with the long forceps, lifts it from the parts until the wire is distinctly seen, and with the scissors clips it on the proximal side, (Fig. 58,) straightening the end at the same time by pressing it outward with the blade of the instrument. This done, plant the blade of the scissors against the loop on the distal side, and drawing on the shot with the forceps, the suture will come away by revolving about the blade of the scissors as a *point d'appui*, (Fig. 59.)

Fig. 59.

Exhibits one of the stitches after its removal, with the shot attached. The loop should be represented more open.

The detail given in what may seem a very simple matter will be appreciated when the reader who has not, may have occasion to perform the operation. If neatly executed, it will save the patient some sharp pain, and not endanger the laceration of the cicatrix. The stitches being all removed, after the manner just explained, the result will be revealed; if favorable, the patient is to be replaced in bed and the catheter again introduced.

After two or three days the bowels should be opened by administering a teaspoonful of castor oil, or a seidlitz powder every four or five hours until a free evacuation is procured. The object in thus exhibiting the cathartic is to thoroughly liquefy, or soften the fœcal accumulations, and prevent tension or straining during defecation. This result may be promoted by the employment of an enema of tepid water just before the evacuation. For five or six days after the removal of the stitches, the patient must continue in bed, and wear the catheter, in order to take off all tension from the cicatrix, and allow it to attain considerable consolidation. After this, the instrument may be removed and she may be allowed to walk about, remembering to pass the urine frequently, and not allow the bladder for several weeks to become distended. Should the union not have taken place, and a considerable portion of the fistula remain unclosed, the catheter may be removed at once, the bowels opened, and the patient allowed to rise and go about as usual. When it is discovered that union has taken place save at a single point, so small, for instance, as to be readily closed by a single stitch, introduce at once that stitch, scarify well the edges, and approximate as before; continuing the management of the case in all respects as in the primary operation for six or eight days longer; the probabilities are it will succeed. In one of my cases, (Case 3,) it was so done, and with complete success. No apprehension need be entertained in regard to keeping the bowels so long confined.

Causes of Failure. These will be found referable to some one of the causes enumerated below. 1st, imperfect freshening of the margins of the fistula; 2d, mal-adjustment; 3d, insufficient tissue from loss of substance, thereby rendering the permanency of the sutures uncertain; 4th, diarrhœa accompanied with tenesmus; 5th, soft state of the tissues, permitting the sutures to cut through readily; 6th, enfeebled state of the health; 7th, thin condition of the sides of the opening; 8th, proximity to the cervix uteri.

In regard to the first and second, the fault being with the operator, can only be remedied by care and experience. The third is not always incapable of being remedied; much may be done by deep stitches, incisions to relieve tension, and rather than abandon the case as hopeless, a plastic operation as practised by Jobert, taking a flap from the inner surface of the labium. Should these fail, then it would be better, rather than allow the woman to remain in so miserable a condition, to freshen the outlet of the vagina, and close up the canal, making a common cavity of it and the bladder. The fourth complication (diarrhœa and tenesmus) will be best met by enematas of laudanum, or suppositories of opium. The sixth (feeble health) by tonics, nutritious diet, and pure air. Seventh, (thin edges of the fistula;) these may be greatly improved by scarifications, and the application of the nitrate of silver every three or four days to the circumference of the opening. Eighth, (proximity to the cervix uteri); when the fistula is situated in or extends to the cul de sac between the vagina and the anterior part of the cervix, any operation for its closure, including only the vesico-vaginal septum, will be likely to prove abortive. To obviate this difficulty when the ordinary method fails, the anterior semi-circum-

ference of the cervix should be freshened, and the vesico-vaginal, similarly treated, stitched to it, thus turning the os into the bladder. In one of my cases, (Case 2,) such a plan was successfully adopted, and the women continue to menstruate regularly through the bladder without any inconvenience whatever.

Failure ought not in any way to discourage either patient or the surgeon. The rule is to operate until the case is cured, as such a consummation is certain, unless there be some unusual state of things present. One caution is necessary here: The operation should not be repeated until at least six weeks have elapsed.

Sequels. There sometimes follows a successful closure of the fistula a certain degree of incontinence of urine, which is due generally to one of two causes. First, loss of power in the sphincter vesicæ, permitting the urine to escape when the bladder is distended, or during coughing, sneezing, or even laughing. This condition may follow when fistula has been at the neck of the bladder. The second cause is shortening of the lower wall of the urethra, with a patulous condition of the meatus—as in cases where the opening is low down, with such a loss of substance that when the stitches are inserted, and the parts drawn together, the traction produces the effect already stated on the urinary canal.

To remedy these defects, tonics, cantharides, and strychnia have been prescribed; yet, after all, time is the great restorer, as the parts tend gradually to assume their original condition. Should the incontinence be so great as to produce much discomfort, an elastic ring pessary may be passed within the orifice of the vagina. In one case, (No. 14,) I had to resort to this, with the most complete success.

Report of Cases of Vesico-Vaginal Fistula Successfully Treated, and which have furnished the basis of the previous papers.

Case 1. F. H. was admitted into the Philadelphia Hospital, Blockley, suffering from a vesico-vaginal fistula. The following account of the accident was obtained from the patient: In January, 1858, she gave birth to a child. Her labor was exeeedingly difficult and prolonged, to aid which ergot was freely administered by her medical attendant. After delivery, for several days she was unable to pass urine; which, continuing to accumulate, and not being relieved by instrumental interference, she suddenly felt a large gush of water escaping from the vagina, since which time the urine continued to flow by this route. In May, 1858, her physician performed an operation for her relief. This failing, a second was tried, two or three weeks subsequently, with a similar result. The operation adopted was, I presume, that of Dr. Sims, with the addition of the Bozeman button, as she described the employment of silver wires, and a lead plate. Since the accident, she informs me she has not menstruated; but alleges, that when the period comes round, a very copious flow of urine takes place, and continues for two or three days. I was invited to see her, July 1st, 1859, by Dr. R. K. Smith, Chief Resident Physician; and in company with himself, and Dr. Elwood Wilson, made an examination. An extensive transverse rent was discovered, extending from one side of the vagina to the other, and situated at the bas fond of the bladder. Through this protruded a considerable mass of the mucous membrane of the bladder. At the request of Dr. Smith, and her own earnest entreaty, I consented to attempt her relief by an operation.

On the 23d of August it was performed in the presence of Drs. Smith, Wilson, Levis, McClellan, Darby, Nichols, and the internes of the house, the bowels having the day previous been well emptied. The steps of the operation consisted in placing the patient under the influence of ether, turning her over, supported on the arms and knees, and exposing the fistula by inserting rectangular or lever speculæ along the walls of the vagina, which enabled the assistants to draw the parts well asunder. The edge of the fistula was next seized with a pair of long rat-toothed forceps, and well pared by means of a long-handled straight bistoury. As soon as the bleeding ceased, nine stitches of silver thread were inserted, the needles being guided by the needle-holder of Mr. Gemrig, (see Fig. 46, page 273.) The wires being brought out of the vagina, the opening was drawn together by passing the two ends of each through an adjustor, which was slid down to the wound, while the threads were firmly maintained between the fingers. Not being altogether satisfied with the principle of the Bozeman button, as it prevented the operator seeing the approximation, I had a fenestrated one constructed out of lead (Fig. 60.) Through the perfora-

Fig. 60.

tions in its centre-bar the wires were next passed, the button run down over the line of adjustment,

and there maintained by passing the ends of each suture through a perforated shot, which, being slipped down in contact with the button, was there secured by compressing it between the blades of a strong pair of forceps. The wires were next collected together, brought out of the vagina, and wrapped with adhesive plaster to prevent excoriation; and finally, the patient placed in bed, on her side, a catheter (Sims') was introduced into the bladder, and the urine recieved on cloths placed beneath the end of the instrument. Half a grain of opium was directed to be given twice daily, and the diet to consist chiefly of arrow-root and cream. The catheter was to be closely watched that it should not become obstructed, to obviate which, it was to be removed once or twice a day, and cleansed. No constitutional disturbance occurred, nor was there any local soreness experienced. On Wednesday afternoon, September 1st, being ten days after the operation, I proceeded to remove the button and sutures, when the union was found to be complete. As a precautionary measure the catheter was directed to be worn eight days longer. On the twelfth day her bowels were opened, and again locked up for five or six days. Ten days after the removal of the ligatures she was allowed to rise from her bed and walk about.

Case 2. A. M., an Irishwoman, about thirty years of age, during a severe labor with a first child, ruptured her uterus, the child escaping into the abdomen. The fœtal head had not passed below the superior strait of the pelvis, the diameters of which were contracted. The case being under the care of the medical officers of the Nurses' Home, Dr. E. Wilson was immediately summoned to her aid by the attending physician, Dr. Scholfield. The propriety of the *abdominal section* admitted of no question. The operation was accordingly performed by Dr. Wm. Byrd Page, the child removed through the parieties of the abdomen, and the life of the mother preserved. Sometime afterward it was discovered the rent in the uterine walls had extended through the cervix and involved the vagino-vesical septum, giving rise to a fistula. After the restoration of the woman's general health, she was placed in St. Joseph's Hospital, and at considerable intervals three unsuccessful attempts were made to close up the orifice, which was situated near the cervix uteri, and running in an oblique direction, about three-quarters of an inch in extent. Two of these operations were skilfully performed by the Bozeman method, employing as a retentive mechanism a lead plate or button. The patient was afterward placed in the Philadelphia Hospital, under my charge, where, after some preliminary treatment to improve her general condition, she was operated on by my usual method, seven silver sutures being required to close it properly. On the eighth day the stitches were taken out, and the wound found to be only about one-half closed. On carefully examining the parts, and reflecting over the former failure, I thought I discovered the true source of difficulty, which subsequent events confirmed. The proximity of the fistula to the cervix uteri, the latter organ being somewhat retroverted, prevented an accurate adjustment; indeed the os was turned into the fistulous opening, and pressed toward the bladder. Profiting by this observation, at the second operation, undertaken nine weeks subsequently, I determined to turn the os into the opening permanently. With this end in view, the inferior semi-circumference of the fistula was well pared. Next the posterior half of the cervix uteri, after which eight silver sutures were introduced, and secured by the shot, the ends of the wire being cut off close to the latter. The os uteri was by this method turned into the bladder. Nothing worthy of note transpired during the subsequent progress of the case. On the eighth day following the operation the parts were examined with a view to remove the ligatures, which were found in such excellent position, without any surrounding irritation, that, at the suggestion of Dr. E. Wilson, who rendered me valuable service in both operations, I was induced to allow them to remain for two days longer. On the tenth day they were clipped out, and to our great satisfaction the fistula closed. Since that time this woman has menstruated regularly through the bladder; enjoyed comfortable health; been able to support herself as servant to a private family, and certainly rid of a most distressing and disgusting malady. Two years after I operated on this same patient for strangulated umbilical hernia, from which she recovered without any unusual symptoms. It is not often we meet with an example of so many grave accidents, operations, and good recoveries, in one person, as are presented in the narrative of this poor, friendless Irish-woman.

Case 3. Catherine ——, a young woman aged 19 years, was seized with labor-pains, September, 1858, at the Philadelphia Hospital. In consequence of the great size of the fœtal head, it became completely impacted in the pelvic cavity. After ineffectual efforts to deliver with the forceps, the operation of craniotomy was resorted to by Dr. R. K. Smith, Chief Resident Physician, and the child readily removed. In consequence,

however, of the prolonged pressure sustained by the anterior wall of the vagina, a slough in a few days separated, opening a communication between that cavity and the bladder, through which the urine flowed. An examination, some weeks after, showed not only the existence of this fistula, but the canal of the urethra closed by inflammatory deposit. A trocar was at once carried through the obstructing material into the bladder, followed by a catheter, which was retained for eight days, only being removed for the purpose of cleansing. In this manner the urethra was restored.

On the 16th of December following, the parts having become sufficiently callous, an operation was performed for her cure; her bowels being well opened the day previous, after which 1½ grains of opium were administered.

She was placed under the influence of a mixture of ether and chloroform, turned upon her abdomen, over a stool well protected, the limbs being supported by two assistants, and the parts exposed by a Sims' speculum. The fistula, which was transverse through the *trigone vesicæ*, and exceeding an inch in its greatest diameter, could now be well seen. The edges were seized with the long rat-toothed forceps, and with a long, straight, sharp-pointed bistoury, pared in their whole extent. Seven needles, slightly curved at their points, each armed with a silver thread, were carried successfully, by means of the needle holder figured in cut No. 46, through the edges of the wound, down to, but not into the vesical mucous membrane. These sutures being brought out of the vagina, were passed through the adjustor, in succession, and drawn upon as the latter was passed down, thus approximating the edges very completely. Perforated shot were next run down over the wires, and clamped by means of the compressor. The sutures were now twisted together, and passed through a small tube of rubber to protect the parts, and the catheter carried into the bladder, to which was attached a flexible piece of gum elastic tubing, designed to convey the urine into a bottle, properly placed between the limbs of the patient for its reception. The patient being placed in bed, an anodyne was administered; the whole time consumed, including etherization, did not exceed one hour. Everything progressed favorably until the third day, when, notwithstanding opium had been given to keep the bowels in a quiescent state, diarrhœa, attended with considerable straining, came on, but which was at length controlled by enemata of laudanum. To make the case more embarrassing, a cough, which she had been troubled with for some time previous to the operation, harassed her so much, notwithstanding the free administration of opium, as sometimes to drive the catheter out of the bladder.

On December the 27th, ten days after the opetion, the sutures were removed, and the wound found to have united, save at one single point, which was subsequently and permanently closed by a single stitch. The catheter was kept in the bladder a few days longer, in order not to endanger the cicatrix. This patient was watched with great care by Drs. Darby, Richardson, and Taylor.

Case 4. Mary H——, aged 25 years; unmarried, temperate, and a Philadelphian by birth, was received into the Philadelphia Hospital in September, 1858, pregnant. This was her second pregnancy. In her first labor, she states she was brought to bed on Monday morning, and delivered the following Thursday morning of a still-born child; the delivery being brought about, as she says, by the physician in attendance using "forcing powders."

On the 29th October, 1858, at 3½, A. M., labor commenced. At 6 o'clock, P. M., it was sufficiently advanced to establish the existence of a breech presentation in the first position. At 2, P. M., the fœtus was expelled as far as the umbilicus; the limbs being much discolored from long-continued pressure in the pelvic cavity. The delivery of the head was delayed by the chin leaving the breast, requiring finally the agency of the blunt hook to bring it down; the labor being completed at 5 o'clock, making from its commencement thirty-seven hours and a half. Alarming hemorrhage followed, which was arrested by the removal of the placenta, frictions over the hypogastrium, and ice. The child weighed 9½ pounds, and measured 22 inches in length. For twenty days the woman passed her urine naturally, and without pain or difficulty. On the twenty-first day it commenced to flow through the vagina; a slough having separated, and formed the fistula. Its situation was at the *trigonum vesicæ*, and about six lines in its greatest diameter.

On the 14th of February, 1859, the parts having attained the requisite healthy conditions, the operation for cure was executed. An aperient was given the day previous. The woman was placed under an anæsthetic of ether and chloroform, (three parts of the former to one of the latter, by weight,) turned over the padded stool on her abdomen, the hips being well elevated, and the fistula being exposed by introducing into the vagina the duck-bill speculum. The edges

were next extensively denuded, and after the bleeding ceased, five silver sutures were inserted, and their ends brought out of the vagina, and the edges closed by the adjuster. Over each was passed a shot, and the stitch made secure by the compressor clamping it on the wires. The sutures were gathered together, and passed through a piece of elastic tubing; the woman placed in bed, and the catheter at once inserted into the bladder, over the end of which was slipped the light gum-elastic tube, to convey the urine into a bottle properly placed in the bed. The bowels were controlled by opium, one-half grain, three times a day, for two days; after which, the one-third of a grain three times a day. The diet consisted of nutritious broths, with some farinaceous articles. Nothing unusual occurred; and on the eighth day the stitches were removed, and the cicatrization found to be complete. The bowels were gently open on the ninth day, and the catheter continued five days longer. On the sixteenth day she was allowed to sit up, and on the twentieth day permitted to exercise in the ward.

This case was reported in detail, by Dr. Darby, in whose care the patient was, Med. and Surg. Reporter, vol. 1, page 435.

Case 5. K. D., a Scotch girl, unmarried, 20 years of age, was admitted into the Philadelphia Hospital in April, 1859, pregnant. Her labor, which occurred in September, was difficult and prolonged, the head presenting, although the position is not known. She was finally delivered by the forceps, of a dead child, at the full term. One week after, the urine was observed trickling from the vagina, and, on examination, some three weeks subsequent, a fistula was discovered, about seven lines long, and situated at the vesicle triangle. Two months after her parturition she was transferred to the Woman's Surgical Ward, and prepared for an operation, by washing out the vagina every day with a solution of tannic acid, to give some tone to the parts; regulating the diet, and improving her condition by tonics. After the lapse of another month, she was considered well enough to justify an operation. This was performed in the presence of the house residents, in the manner already detailed in the previous cases. Seven silver threads were introduced (the patient being under the influence of ether and chloroform), and these stitches secured with the usual clamp of shot. Instead of bringing the wires out of the vagina after the adjustment, they were cut off close to the pellets of shot. Opium was administered in doses sufficient to keep the bowels closed, and the catheter kept in the bladder, and carefully watched that it should not become obstructed with mucous or blood. This girl proved to be a very self-willed and troublesome patient.

On the ninth day after the operation the stitches were taken out, and the fistula, as we believed, closed. She was kept in bed with the catheter in the bladder for five days longer, after which she was allowed to sit up, the instrument being used four times daily, and worn at night for three days more, when it was laid aside, and the patient allowed to walk about. She was retained in the house for two weeks longer, and then discharged well.

About four months later this young woman returned, seeking admission, alleging that the fistula had re-opened. She had evidently, from her own statements, been leading a very irregular life. On carefully inspecting the parts, a small opening, admitting the end of a probe, was detected in the middle of the cicatrix. There could be no doubt this fistula had opened during her absence, as the bladder was perfectly retentive, and the urine passed voluntarily in a full stream for the two weeks previous to her leaving the hospital. Four operations were performed unsuccessfully to close this small hole, at intervals of eight weeks, and requiring but three stitches when freshened. I was satisfied there was something wrong, as there was nothing in the case which could explain this indisposition to heal. I suspected the woman was more anxious to have a home than to get rid of her disease, and doubtless, at night, in the absence of the nurse, withdrew the catheter, introducing it herself before her morning visit. Accordingly, on discovering my failure in the fourth operation, without waiting for some time to elapse, the parts were again denuded, and two sutures inserted; relays of nurses were kept night and day by her bed, and on the eighth day the parts were examined, and the sutures taken out. The opening was closed. The bowels had been confined for 17 days, and after wearing the catheter four days longer, she was allowed to dispense with its use.

My surmises in regard to the cause of failure were corroborated by her own confession. One year after, this poor unfortunate girl applied again for admission, not on account of the fistula, which remained well, but evidently dying from tuberculosis, induced by a life of dissipation.

Case 6. Ann H——, a native of Ireland, aged 33 years, and a resident of Delaware County, Pennsylvania, was admitted into the Philadelphia Hospital on the 24th of January, 1860, with a vesico-vaginal fistula, situated three-quarters of

an inch below the upper extremity of the vagina, four lines in length, and running oblique to the longitudinal axis of the canal. About ten months before her admission into the institution she had been delivered by instrumental means of a child, after a difficult labor of thirty-six hours duration. I believe this was her second child. A few days succeeding this she discovered her urine dribbling away, without being able to exercise any control over its escape. As the woman's health was by no means good, the first attention was directed to its improvement, which, under the employment of mineral tonics, and a good diet, was, in a few weeks, in a good measure restored. The last of the succeeding month (February) the operation was performed, while under the influence of ether and chloroform as an anæsthetic. Four silver sutures were introduced, and secured by means of a wire twister. The wires were next cut off very near to the wound, and the ends turned down in such a manner as not to irritate the posterior wall of the vagina. The catheter was worn uninterruptedly, and the bowels locked up with opium. The case progressed without any unfavorable symptoms whatever, and on the eighth day the stitches were removed, and the union found to be complete. The patient was retained in the hospital nineteen days longer as a precautionary measure, during four of which she was obliged to wear the catheter.

Case 7. Matilda L., aged 24 years, was sent from Wilmington, Delaware, by Dr. Pepper Norris. She entered the hospital August, 1860. An examination proved the existence of a vesico-vaginal fistula at the *bas fond*, transverse in direction, and about six lines in length. It followed her first labor, which was sufficiently difficult to demand delivery of the child (dead-born) by the forceps. The presentation was a cephalic one, and she heard nothing said about anything being wrong. A few days after, she could not state how many, the urine began to flow from the vagina. The woman was pale, cachectic, and had but little appetite. She was placed on a regimen of tonics and nutritious food, in order to improve her health. Some progress was made, but by no means equal to our expectations, and after waiting five weeks, I concluded to make an attempt for her cure. On paring the edges the bleeding became very profuse, and continued, notwithstanding the application of ice and a stream of cold water from the nozzle of a syringe. To arrest this, seven stitches were inserted, and the edges drawn firmly together. Even these did not entirely control the hæmorrhage, some considerable oozing continuing. The catheter was introduced into the bladder, and the patient placed in bed, with directions to administer the usual pills of opium. Difficulty was experienced in keeping the catheter clear, it becoming obstructed with clots of blood for three or four days. She suffered also, throughout the whole treatment, with flatulent colic and some diarrhœa; the last was controlled by enemata of starch-water and laudanum, morning and evening. Her appetite failed, and her stomach became irritable, for the relief of which alkalies were prescribed with benefit. At the expiration of nine days, the sutures wese examined, without being at all sanguine as to a favorable result. Several had ulcerated out, and no disposition was exhibited at any point to heal. They were all removed, and the patient, in a few days, ordered out to take exercise in the open air.

Vegetable tonics, with an occasional mercurial, followed by the tincture of the chloride of iron, wrought a wonderful change in her condition, so that in six weeks after, we deemed her health sufficiently good to undertake a second operation. The edges of the fistula had changed. Instead of being spongy and soft, they had become firm. There was no more than the ordinary bleeding after the application of the knife in vivifying the margins. Six metallic threads were introduced, secured each by the shot-clamp, and the usual treatment pursued. Not a single untoward symptom occurred, and after eight days the stitches were removed, and the union found complete. Dr. Recio, one of the resident-physicians of the hospital, was unremitting in his care of this patient.

Case 8. K. C., born in Ireland, recently from the vicinity of Bordentown, N. J., aged 28 years, entered the hospital in the spring of 1860*, with a vesico-vaginal fistula situated a short distance above the neck of the bladder, oblique in position, and about five lines in extent. The entrance to the vagina was much constricted, rendering the exposure of the fistula difficult. The accident occurred about eighteen months before, in a first labor, in which a dead female child was delivered by instruments. She is not certain that the head presented. Difficulty was experienced in adjusting the instruments, and she felt as though the vagina had been torn at the time. As the fistula was seated above the stricture, it became necessary to institute the preliminary treatment of dilatation, which was effected by gum-elastic bougies, after two weeks. This

* The record of this case being lost, I am unable to refer with certainty to the date of her admission, my own notes only containing the details of the operation.

accomplished, the operation was performed in the presence of the medical residents, the patient being under the influence of the usual anæsthetic of ether and chloroform. After the edges were sufficiently denuded, six metallic (silver) threads were introduced, the parts brought in contact by passing each suture in detail through the adjustor, and securing the apposition by the shot-clamp. The rigid character of the vaginal walls, in consequence of the amount of cicatricial tissue, rendered all manipulations difficult.

From this until the ninth day following, nothing of importance occurred. The threads were on this day removed, and the fistula found about two-thirds closed. She was allowed two months' respite, occasionallly having a large-sized bougie introduced to counteract the persistent tendency to contraction of the vaginal canal, after which a second operation was executed, in which four stitches were inserted. A good deal of bleeding from the bladder followed for two days succeeding this, rendering it difficult to keep the catheter unobstructed. On the third day it ceased, and the case progressed very favorably during the remaining period of her treatment. The stitches were cut out on the ninth day, the union having taken place throughout. This woman, after getting about, complained of some incontinence, and I was disposed to believe some minute orifice must still exist, although undiscovered. Since, however, the nurse informs me, this disappeared, and she left well.

Case 9. Mrs. G., an Irish woman, aged 40 years, who married late in life, fell in labor with a first child January, 1863. She states her pains commenced on a Friday, and gradually increased in severity until the following Sunday, when she became so exhausted as to render the application of the forceps necessary to complete delivery. The child, a male, head presentation, was born dead. The bladder had not been catheterized. At no time after that had she a sensation like urine passing by the urethra. Her getting upwas slow, and it was many weeks before she was able to walk, in consequence of a feeble state of the limbs, with diminished sensibility. In November, 1863, she was kindly referred to me by Prof. F. G. Smith, of the University of Pennsylvania, to whose care she had been sent from the country. On examination, a fistulous opening was found between the vagina and bladder, situated at the *bas fond*, three-fourths of an inch in extent, and transverse in direction.

On the 10th of November, I operated in my usual manner, assisted by Profs. F. G. Smith, Penrose, Drs. La Roche and Boardman. Nine silver threads were inserted and secured by the shot-clamp. The usual course in regard to opium, catheter, and diet was observed. Nothing unusual occurred, worthy of note, during the treatment. On the ninth day the stitches were removed, and the wound found united. The catheter was continued five days longer, the bowels being gently moved on the twelfth day after the operation. This patient I saw over two years after, when she stated she remained perfectly well, and was about four months advanced in her second pregnancy.

Case 10. L. L., aged 35 years, from Pennsylvania, was admitted to the Philadelphia Hospital in the month of April, 1864, suffering from a transverse vesico-vaginal fistula, three-quarters of an inch in extent, and situated in the bas fond, with the complete destruction of the urethra. She was married at the age of 17 years, and 15 months after fell in labor with her first child at full term. She knows the child presented by the vertex. After being in labor forty-eight hours the forceps was applied, and after one hour the child was extracted dead, a male, and more than ordinarily large. Her urine, she states, was not drawn off, and she was never conscious, after delivery, of passing her water the natural way. This fistula was therefore over seventeen years' standing. The vagina had undoubtedly sustained much injury, as it was greatly narrowed in its whole extent. Her health was poor, and in no condition for an operation. She was placed on a tonic course of treatment, with some improvement, and on the 9th of June, 1864, I concluded to make an attempt for her relief. The edges were pared, and fifteen wire threads inserted, securing each with the shot, which closed the vesico-vaginal rent satisfactorily. A catheter was placed in the bladder, and worn for nine days, when the stitches were removed; no attempt even at union seemed to have occurred. Increased attention was now given to her general health, and on the 28th of the following October, a second attempt was made, twelve stitches being inserted, and with an unsuccessful result, union having taken place only to the extent of one-third of an inch. On the 3d of March, 1865, a third operation was executed, nine sutures being used, and the result again unfavorable. On the 2d of June a fourth operation was performed, in which nine threads were employed, and this time with complete success. During the period she had been suffering from this fistula she had five miscarriages, all occurring at the fourth month. It is contemplated to

attempt next the formation of a urethra for this patient.

Case 11. Mrs. H., aged 28 years, residing in an adjoining State, fell in labor with a first child. Her parturition was slow, vertex presentation, and becoming exhausted, the forceps was applied for her relief, and the process completed by the removal of a dead female fœtus at full term. Four or five days following, her urine was discovered dribbling over the genitalia, and on inquiry, by her physician, little doubt was entertained that a fistulous opening existed between the bladder and vagina. On the 24th of May, 1865, eight weeks after recovery, I visited her, and on examination discovered the opening situated near the cervix vesicæ, oblique in direction, and about three-quarters of an inch in extent. She was placed under an anæsthetic of ether, and after freshening the margin of the opening, it was brought together by six sutures of silver wire, and clamped with shot, the usual detail of treatment being observed. In consequence of some pleuritic symptoms occurring about the eighth day, the stitches were not removed until the tenth day, when the wound was found thoroughly united.

Case 12. Mrs M., of Philadelphia, aged 30 years, applied to be relieved of a vesico-vaginal fistula. A few months previous she had been delivered of a dead child (her first), after being in labor forty-eight hours. It was a breech presentation, and after the extrusion of the body, the head was retained for several hours. At what time after, the opening occurred she could not determine, as she had no sensations decisive of the accident, but believes the urine dribbled ever after her labor.

On the 24th of November, 1864, I operated, assisted by Drs. McLerny, Wilson, and Allen. The opening was situated about three-quarters of an inch above the cervix vesicæ, transverse in direction, and about six lines in extent. It was freely freshened, and closed with eight silver sutures. Nothing unusual occurred during the subsequent course of the case, and on the ninth day the sutures were removed, the opening to all appearance closed. After getting up she was under the impression all was not quite right, as she was conscious of an unusual moisture at the outlet of the vagina, and her clothing had a urinous odor; still she was able to pass her water in a fair stream. On examination I failed to detect any opening, although the bladder was not injected, the cicatrix looking so perfect. I was disposed to believe the urethra or neck of the bladder had not entirely recovered tone, and allowed some to escape, and advised the use of tonics, with the extract of nux vomica, and not to allow the urine to accumulate. The difficulty was not relieved, and, on a second careful examination, an opening, of almost capillary dimensions, was discovered at one angle of the cicatrix. The part was denuded, and two stitches inserted, which completed the cure, as she has since been perfectly well.

Case 13. Mrs. ——, æt. 30, a small delicate lady from a distant land, in a first labor, greatly protracted, discovered, after five days, her urine running from her without control. She was informed that a fistula existed, and was for some time treated by cauterization. Becoming in the meantime pregnant, all remedial measures were suspended. Her confinement took place in Philadelphia, under the care of Dr. Stroud, seven weeks after which, I was invited by the Doctor to visit her and examine the case. The fistula was quite small, and situated in the vesicle triangular space. On Sept. 12th, 1865, assisted by Drs. Stroud, Hunt, Rodman, and Townsend, I performed the usual operation, inserting, after the edges were properly denuded, four silver sutures, and securing them with shot. The subsequent treatment was conducted by Dr. Stroud. The only troublesome symptom arising in the progress of her case was occasionally a violent spasmodic contraction of the bladder, expelling the catheter, but which was overcome by enemata of a little thin starch-water with laudanum. On the ninth day I removed the sutures, the opening being successfully closed. Very recently I have heard from this patient, who continues to enjoy perfect health.

Case 14. Mrs. G., æt. 29, residing in a neighboring village, went into labor with her first child. Her pains were severe and exhausting. The head of the child presented, and after thirty-six hours, the forceps were applied and the child extracted, dead. Her urine had not been removed during labor, and she thinks that, four days after, it commenced escaping from the vagina.

When I first visited her, she informed me a year and a half had elapsed since the accident, and that three operations had been attempted without success. On examination a double fistula was discovered, each running transversely through the vesical triangle, and separated from each other by about three-eighths of an inch. This condition was easily explained by referring to the previous operation—the middle of the wound uniting, and the extremities remaining open. Assisted by Drs. Morton, Sutton, Agnew, and

Weightman, I operated a few days after, by paring the edges of each, and closing one with five, and the other with four sutures. Everything progressed well until the third day, when she was seized with pain in the abdomen, with free bleeding from the vagina, which at first I was disposed to believe was a copious menstruation. Her bowels also became disturbed, and her appetite failed. Opium and warm fomentations relieved her pain and diarrhœa, but the bleeding continued for seven days. On the ninth day, the threads were removed, one fistula being found closed, and the other open. After this the woman became pale and dyspeptic, and in no condition to justify an operation. Under a properly regulated diet and tonics, she improved rapidly in general health, and in the meantime became again pregnant.

Two months after her confinement, on the 4th of November, 1865, assisted by Drs. Patterson, Hall, and Townsend, I operated, closing the opening with nine metallic threads. Not an unpleasant symptom occurred, and the sutures were removed on the ninth day following, the wound proving to be closed soundly in its entire extent. An interesting fact connected with this case was the disposition, if she allowed her bladder to become too much distended, to some incontinence. To correct this an elastic-ring pessary was introduced, which, by its pressure on the neck of the organ, effectually relieved the difficulty.

Case 15. S. G., aged 25 years, a native of Ireland, was admitted into the Pennsylvania Hospital, October the 10th, 1865, suffering from a vesico-vaginal fistula since the April previous. It occurred as a consequence of a tedious labor with her second child, forty-eight hours having elapsed before it was delivered. Her physician stated to her it was a cross-birth. No instruments were used, but the leg of the child was broken in two places. Of course the fœtus was dead. The time she passed her urine first through the vagina, she could not determine, but thinks before the second day after her confinement. At the expiration of two weeks she got up, but found herself so weak on her limbs as to be unable to walk. Her first labor was not difficult. After her recovery, two operations were performed for the closure of the fistula, by her physicians, both unsuccessful. On examination, after her admission, the fistula was found to extend longitudinally from the neck of the bladder to the os uteri, and inclining to the left of the cervix passed along its entire length.

On the 24th of October, assisted by Drs. Hunt, Morton, Hewson, and the hospital residents, I executed the operation described in the previous cases. As the neck of the uterus formed one side of the fistula above, the os looking into the bladder, it was necessary to freshen it, and secure it to the opposite side. The opening was closed longitudinally with thirteen sutures. Not an unfavorable symptom followed the operation, and on the ninth day these stitches were taken out, and except at a single point, where the vaginal wall blends with the cervix uteri, a solid union secured. To close this a second operation was performed, eight weeks after, requiring three stitches, and resulting in complete closure.

Anomalous Symptoms.—Death.—Pyæmic Peritonitis.

Reported by Dr. William Pepper, Resident Physician.

Case 16. Cornelia Augusta Handy, æt. 24, colored, was admitted to Pennsylvania Hospital April 14th, 1866, suffering with a vesico-vaginal fistula of very great size, resulting from prolonged second stage in her first labor, six months ago. She has been for years in delicate health, though evincing no positive sign of organic disease. Dr. Agnew operated upon her, Thursday, April 19th, 1866, the edges being pared and brought together, antero-posteriorly, by thirteen silver sutures, clamped with shot. The two upper stitches including the involved anterior lip of the os uteri. A full opiate was administered, and a self-retaining catheter introduced. The urine came readily through catheter, and the woman did well until the afternoon of Saturday, April 21, 1866, when she had a very slight chilly sensation, followed by scarcely any fever or sweat. The following morning I found her with a dry hot skin, restless, lying on her back with legs drawn up, complaining much of abdominal tenderness. The entire abdomen was sensitive to pressure, rather more markedly so in the hypogastric region than elsewhere. There had been very little hæmorrhage, and the catheter remained quite clear. She was at the time under mild opiate influence—having taken gr. i. twice daily. Bowels constipated. Opium and emollient applications to abdomen were ordered, but during the day she had four or five thin serous stools, and vomited a number of times, the abdominal symptoms remaining unabated. No recurrence of chill.

April 23d. Much the same. Diarrhœa and vomiting persisting. Complains of abdominal tenderness. Tongue furred in centre, merely dryish. Pulse rapid and small. Catheter runs freely, but little blood passing. No chill or chilly sensation. Opii, gr. ½, calomel, gr. ss., q. t. h. Hop-poultice to abdomen. Light diet.

April 24. Expresses herself as feeling better. Less abdominal tenderness. Belly not distended. No vomiting. Less diarrhœa. There is, however, extreme huskiness of voice, and mental dejection.

April 25th, 26th, 27th, 28th. Remained in much the same condition, excepting that great jaundice came on, the conjunctivæ being deeply yellow, and the jaundice-tinge showing through the dark skin. The vomiting has not recurred; but, despite the free use of opium, she had several thin stools daily. The calomel and opium were suspended after sixty hours, as the abdominal tenderness disappeared almost entirely; the pulse became less frequent, and the skin less parched and dry; and HUXHAM'S tincture of bark, with nitro-muriatic acid and a small amount of stimulus, were ordered. There was nothing like a chill or intermission in the febrile movement. The voice remained very husky and feeble, and she evinced great hebitude.

April 29th. Expressed herself as feeling more comfortable. Had some appetite. Pulse not more than 110. Jaundice somewhat decreased perhaps. Bowels more quiet. Tongue dryish and coated. Abdomen not sensitive, rather retracted. No cough. Heart sounds healthy. No delirium or brain symptoms. Voice extremely feeble, but is a little more animated.

April 30th. Stitches removed by Dr. AGNEW. The anterior half of fistula found to have healed, this being the twelfth day. The vagina was coated with yellowish layers of lymph, mixed apparently with urinary salts. Condition very much the same.

May 1st. Much the same. Pulse small, but not so frequent. Skin not harsh. Tongue dryish. Jaundice marked. Considerable hebitude, but perfectly rational, and expresses herself as feeling more comfortable and stronger. Her appearance, however, belies her, as she was evidently emaciating rapidly. Her voice was almost extinct. She seemed to be more easy when lying on her side, and yet was almost unable to turn over. Made no complaint of pain. Had no diarrhœa or vomiting. Took nourishment quite well, and passed the day much as usual, but about 10, P. M., after having spoken to the night nurse five minutes previously, she was found dead, lying quietly in the same position—on right side.

Post Mortem, fifteen hours after death. Quite marked rigor mortis. Body emaciated. Spine not examined.

Brain presented no abnormal condition, save that it, like all other parts of the body, was deeply stained of a yellowish hue. The blood in the cerebral veins was clotted, as it was in most of the vessels of the body.

Thorax. Lungs anæmic, congested posteroinferiorly, but contained no pyæmic deposits. Bronchial glands not enlarged. Heart contained no fluid blood, and a very small, quite firm coagulum in right ventricle, extending into pulmonary artery, but by no means filling its calibre. Healthy in structure, though these organs, as all the others, were stained yellow.

Abdomen. On opening the abdominal walls, there was a gush of thick yellowish, ochre-colored fluid, identical in thickness, color, and smell, with the fluid so often seen in pyæmic pleurisies, and upon examining the cavity of abdomen, it contained at least Oij. of this fluid. All of the viscera were coated more or less with yellowish cheesy-looking lymph, although the spleen, greater omentum, and ilium were so to a most marked degree. Upon stripping off this lymph, the subjacent peritoneum seemed almost entirely healthy, not having even an excoriated appearance. In no place had any adhesion formed between two portions of this deposit.

The liver was of normal size and consistence, but deeply stained with the same yellowish tinge as were the other organs.

Gall-bladder pale and almost empty.

Spleen slightly enlarged and rather soft.

Pancreas healthy. Kidneys apparently healthy.

There was an increase of these appearances over the bladder and rectum, and upon opening bladder, it was found merely much discolored by chronic congestion. It was somewhat thickened, but no evidence of any recent inflammation.

The uterus was of fair size, firm, and on section, presented a normal appearance. The mucous membrane of its cavity was dark and somewhat thickened. No evidence of inflammation of uterine veins. Fallopian tubes healthy apparently; calibres free.

The fistula was found, as stated, reduced in size. Edges presenting a pale granulating surface encrusted with phosphates. The neck of uterus, we have seen, was turned into the bladder, and the highest stitches almost passed through tissue of the os, but no evidence existed of any uterine inflammation, or of the peritonitis having started from this point.

Stomach and intestines presented nothing to account for gastro-intestinal symptoms, excepting some softening and thinning of the mucous membrane.

Urine could not, of course, be obtained.

The fluid in abdomen contained granular corpuscles, with single or double nuclei, some with none apparent, large nucleated cells, a little hæmatin. After addition of acetic acid, a few corpuscles showed trefoil nuclei. Most of the corpuscles, however, had but one or two. Some coagulation of mucus. The whole being evidently cacoplastic lymphy fluid.

The *blood*, bistre tinted, pale and thin, clotting imperfectly, though quite rapidly, forming large dark clot, full of white corpuscles. No attempt at formation of rouleaux. Red corpuslès crenated. Quite numerous flakes of hæmatin.

There was no enlargement of inguinal, pelvic, or lumbar glands.

(Reported by Dr. Andrews, Resident Physician.)

Case 17. M. S., æt. 38 years, a native of Ireland, was admitted into the Pennsylvania Hospital, February 13th, 1866, suffering with vesico-vaginal fistula. She was a woman of good habits, but living in a miserable house, in the vicinity of one of our suburban towns. The accident happened with her fifth child; was delivered with instruments, after being in labor two days. Presentation, head. In her former labors she had experienced no trouble. The fistula, on examination, proved to be longitudinal, and quite two inches and a half in length. The tissues appeared healthy. After a few days of preparation, consisting in regulating the diet and opening the bowels, the operation for her cure was performed by Dr. Agnew, in presence of Drs. Hunt, Morton, and the Resident physicians of the hospital. The patient being under the influence of ether, the edges were extensively pared, and fourteen silver stitches inserted, which were secured by the shot-clamp; the approximation being effected longitudinally. She was now placed in bed, a catheter placed in the bladder, and one grain of opium ordered morning and evening. For four days everything went on well; all the urine passing by the catheter, appetite good, pulse normal, and abdomen soft. On the 5th she was taken with a severe chill, followed by headache, vomiting, and mental aberration. As she had suffered from chills before entering the hospital, it was hoped this might be nothing more than a return of the intermittent attack, and accordingly quinine was prescribed in antiperiodic doses.

6th. Vomiting continued; bowels loose; delirium increased; eyes inflamed; tongue dry and crisped. Lime water and milk administered; also camphor water, with liq. morph. sulphatis.

7th. Some abatement of vomiting; stomach retains a little liquid nourishment; bowels very loose, with dyspnœa and a sensation of choking; also some tympany; pulse 100. Beef essence, and an enema of tincturæ opii gtt. L. in a little starch water.

8th. Eruption made its appearance over the abdomen, resembling that of typhoid fever; belly tympanitic; tongue dry and brown; dyspnœa less; pulse becoming more frequent; twelve of the stitches removed by Dr. Agnew, with the assistance of Dr. Hunt, the union appeared complete, save a small point at the upper extremity of the wound. The removal was dictated by the feeling, that, possibly, they might have kindled up inflammation, which had extended to the serous lining of the pelvis and abdomen. Ten drops of oil of turpentine, in mucilage, directed every two hours; beef essence; milk punch.

9th. Patient exceedingly exhausted; pulse very frequent; muttering delirium; diarrhœa; enema of laudanum; continue stimulants and nourishment.

10th. Died.

Post-mortem, six hours after death. Adhesions between the margins of the fistula had given way, and were coated with a dirty lymph; no inflammation of bladder or uterus. The viscera of the abdomen were much congested, though not inflamed. Peyer's patches healthy; no signs of ulceration; no peritonitis; no metastatic abscesses. The lungs somewhat congested, (hypostatic); the pulmonary pleura covered with soft lymph. During life, a blowing sound emitted with the first sound of the heart was noticed, but no lesion of the organ appeared on examination. The blood was remarkably fluid. In all probability, had this patient been operated on outside of the hospital, the termination would have been otherwise. A number of cases of pyæmia having occurred in the wards, the atmospheric conditions were beyond all doubt unsafe. The same may be asserted of Case 16.

Case 18. Rose ——, an Irish-woman, aged about 33 years, was admitted into the Pennsylvania Hospital in June, 1866, for vesico-vaginal fistula. On examination, a stricture of the vagina was found about the middle of the canal, the opening not exceeding a quarter of an inch in extent. The tissue around was dense, almost cartilaginous in consistence, and the vagina greatly diminished above. It was, of course, impossible to see just where the communication with the bladder existed, but of the fact no doubt existed, as the urine all passed through the vagina. The accident occured in a first labor, which had been tedious, lasting two days. Thinks no instruments were used. Did not understand

anything was wrong. It was of eight years' standing, and had once been operated on by a surgeon without success. Her health was tolerably good, though she was exceedingly nervous. I concluded to vivify the edges of the vaginal stricture, and unite them with the metallic threads, thus converting the narrow upper part of the vagina and the bladder into a common cavity. This course was resolved upon, as the thickening and extensive rigidity of the vaginal walls would have made the process of dilatation very slow and unsatisfactory. This was accordingly done, and four sutures inserted, secured in the usual way. The bladder was kept drained with the self-retaining catheter, and everything passed satisfactorily until the fourth day, when she complained of great abdominal distension, with severe paroxysms of pain. All of this was due to accumulation of flatus, and nothing seemed to control it. Her appetite failed, and she was harassed with nausea. On the ninth day the stitches were taken out, but no union had occurred. She left the hospital with the understanding she should return, with a view of giving her some preliminary general treatment before another operation should be undertaken.

ERRATUM.

Page 16, 2d column, first line after (Fig. 8), read as follows:

to freshen the parts. The lining membrane of the bladder he does not disturb, unless it protrudes through the opening in excess. When the fistula was very small he hooked the tenaculum through both sides, and raising it up, cut out a circular portion with the bistoury. When the vesical mucous membrane concealed the margin of the fistula, interfering with its proper management, a soft sponge should be pressed through the opening into the bladder, and allowed to remain until the stitches are ready for adjusting. To remove the blood from the parts during the operation, little mops (Fig. 9) should be on hand. These are readily made by securing small bits of sponge, to whalebone, or rods of wood.